

Protection devices

Selection guide



October 2009

Electrostatic discharge protection (ESD): IEC 61000-4-2/MIL STD 883G-Method 3015-7

Clamping arrays

Part number	Number of lines	IEC 61000-4-2 contact/air	V_{RM}	I_{RM}^{max} @ V_{RM}	V_{BR}^{min} @ I_R		C typ @ 0 V bias	T_J^{max}	Package
		(kV)	(V)	(μ A)	(V)	(mA)	(pF)	(°C)	
Unidirectional clamping arrays									
ESDALC3V9-1U2	1	> 8	2	0.07	3.9	1	12	125	ST0201
ESDAXLC6-1MY2	1	> 8	3	0.1	6	1	0.35 max	125	SOD-882
ESDALC6V1-1U2	1	> 8	3	0.1	6.1	1	12	125	ST0201
ESDALC6V1-1M2	1	> 8/15	3	0.1	6.1	1	22	125	SOD-882
ESDA8V2-1J	1	> 8/15	5	0.5	8.2	1	210	125	SOD-323
ESDA8V2-1MX2	1	> 8/15	5	0.5	8.2	1	350	125	μ QFN 2L
ESDALC12-1T2	1	> 8/15	10	0.2	12	1	15	125	SOD-882T
ESDALC14V2-1U2	1	> 8/15	3	0.1	14.2	1	6	125	ST0201
ESDA18-1F2	1	> 8/15	10	0.5	16	1	230	125	Flip-chip 500 μ m
ESDA5V3L	2	> 8/15	3	2	5.3	1	220	150	SOT-23
ESDALC6V1M3	2	> 8/15	5	0.5	6.1	1	11	125	SOT883
ESDALC6V1P3	2	> 8/15	3	0.1	6.1	1	12	150	SOT663
ESDA6V1L	2	> 8/15	5.25	20	6.1	1	140	150	SOT-23
ESDA12-1K (*)	1	> 8/15	10	0.5	12	1	200	150	SOD523
ESDA14V2L	2	> 8/15	12	5	14.2	1	90	150	SOT-23
ESDA18-1K (*)	1	> 8/15	16	0.5	18	1	200	150	SOD523
ESDA25L	2	> 8/15	24	1	25	1	50	150	SOT-23
ESDA25W	2	> 8/15	24	1	25	1	65	125	SOT323-3L
ESDA5V3SC5	4	> 8/15	3	2	5.3	1	280	150	SOT23-5L
ESDA5V3SC6	4	> 8/15	3	2	5.3	1	280	150	SOT23-6L
ESDALC6V1F2	4	> 8/15	3	0.5	6.1	1	12	125	Flip-chip 500 μ m
ESDALC6V1M6	4	> 8/15	3	0.07	6.1	1	12	125	μ QFN-6L
ESDALC6V1P5	4	> 8/15	3	0.1	6.1	1	12	150	SOT-665
ESDALC6V1P6	4	> 8/15	3	0.1	6.1	1	12	150	SOT-666
ESDALC6V1W5	4	> 8/15	3	1	6.1	1	12	150	SOT323-5L
ESDA6V1M6	4	> 8/15	3	0.5	6.1	1	70	125	μ QFN-6L
ESDA6V1P6	4	> 8/15	3	0.5	6.1	1	70	150	SOT-666
ESDA6V1W5	4	> 8/15	3	1	6.1	1	90	125	SOT323-5L
ESDA6V1SC5	4	> 8/15	5.25	20	6.1	1	190	150	SOT23-5L
ESDA6V1SC6	4	> 8/15	5.25	20	6.1	1	190	150	SOT23-6L
ESDA14V2SC5	4	> 8/15	12	5	14.2	1	100	150	SOT23-5L

ESDA14V2SC6	4	> 8/15	12	5	14.2	1	100	150	SOT23-6L
ESDA19SC6	4	> 8/15	15	0.1	19	1	80	125	SOT23-6L
ESDA25W5	4	> 8/15	24	1	25	1	30	125	SOT323-3L
ESDA25SC6	4	> 8/15	24	1	25	1	60	150	SOT23-6L
ESDA6V1-5T6	5	> 8/15	3	0.1	6.1	1	12	125	μDFN-6L
ESDALC6V1-5M6	5	> 8/15	3	0.07	6.1	1	12	125	μQFN-6L
ESDALC6V1-5P6	5	> 8/15	3	0.07	6.1	1	12	125	SOT-666
ESDALC6V1-5T6	5	> 8/15	3	0.1	6.1	1	12	125	μDFN-6L
ESDA6V1-5SC6	5	> 8/15	3	1	6.1	1	50	150	SOT23-6L
ESDA6V1-5W6	5	> 8/15	3	1	6.1	1	50	125	SOT323-6L
ESDA6V1-5M6	5	> 8/15	3	0.5	6.1	1	70	125	μQFN-6L
ESDA6V1-5P6	5	> 8/15	3	0.5	6.1	1	70	150	SOT-666
ESDA17-5SC6	5	> 8/15	14	0.075	17	1	35	125	SOT23-6L
ESDA6V1U1	6	> 8/15	5	2	6.1	1	100	125	SO-8
ESDA6V1S3	18	> 8/15	5	2	6.1	1	120	150	SO-20
Bidirectional clamping arrays									
ESDARF01-1BM2	1	> 8/15	0.1	1	0.7	1	3	125	SOD-882
ESDAXLC4-1BF3 (*)	1	> 8/8	3	0.1	4	1	0.5	125	ST0302
ESDALC5-1BM2 (*)	1	> 8/15	5	0.1	5	1	27	125	SOD-882
ESDALC5-1BT2 (*)	1	> 8/15	5	0.0	5	1	27	125	Thin SOD-882
ESDARF03-1BF3	1	> 8/15	3	1	6	1	0.6	125	Flip-chip 400 μm
ESDALC6V1-1BU2	1	> 8/16	6.1	0.1	6.1	1	5	125	ST0201
ESDAVLC8-1BM2 (*)	1	> 8/15	3	0.05	8.5	1	4.5	125	SOD-882
ESDAVLC8-1BT2 (*)	1	> 8/15	3	0.05	8.5	1	4.5	125	Thin SOD-882
ESDA14V2-2BF3	2	> 8/15	12	0.5	14.2	1	12	125	Flip-chip 400 μm
ESDAULC6-3BP6	3	> 8/15	5	0.5	6	1	1	150	SOT-666
ESDAULC6-3BF2	3	> 8/15	5	0.5	6	1	1.25	150	Flip-chip 500 μm
ESDA6V1BC6	4	> 8/15	5	1	6.1	1	20	150	SOT23-6L
ESDA6V1-4BC6	4	> 8/15	3	1	6.1	1	45	150	SOT23-6L
ESDA14V2BP6	4	> 8/15	12	1	14.2	1	20	125	SOT-666

Notes:

(*) : Products under development

Flip-chip (F2) available with coating (C2 suffix)

Electrostatic discharge protection (ESD): IEC 61000-4-2/MIL STD 883G-Method 3015-7

Clamping arrays (cont'd)

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _R max @ 15 V (μA)	V _F max @ 50 mA (V)	C max @ 5 V (pF)	T _J max (°C)	Package
Rail-to-rail protection								
DA108S1RL	4	> 8/15	18	2	1.2	35	150	SO-8
DALC208SC6	4	> 8/15	9	1	1.2	7	150	SOT23-6L
DA112S1RL	6	> 8/15	18	2	1.2	35	150	SO-8
DALC112S1	6	> 6/8	18	2	1.3	7	150	SO-8
DALC112S1RL	6	> 6/8	18	2	1.3	7	150	SO-8

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V) (mA)		C typ I/O to Gnd (pF)	C typ I/O to I/O (pF)	T _J max (°C)	Package
USB port protection										
USBULC6-2M6	2	> 8/15	5	0.5	6	1	0.95	0.5	150	μQFN-6L
USBULC6-2P6	2	> 8/15	5	0.5	6	1	1.0	0.5	125	SOT-666
USBLC6-2SC6	2	> 8/15	5	1	6	1	2.5	1.2	125	SOT23-6L
USBLC6-2P6	2	> 8/15	5	1	6	1	2.5	1.2	125	SOT-666
USBULC6-2F3	2	> 8/15	3	0.1	6	1	1.2 (max)	-	125	Flip-chip 400 μm
USBULC6-3F3 (*)	3	> 8/15	3	0.1	4	1	1	-	125	Flip-chip 400 μm
USBLC6-4SC6	4	> 8/15	5	2	6	1	3	1.85	125	SOT23-6L
USB6B1RL	4	> 8/15	5.25	10	6	1	15	25	150	SO-8
USBULC1606-4M8	3 + Vbus	> 8/15	3/11	0.1/1	6.8/14.6	10	1.0	-	125	μQFN-8L

Notes:

(*) : Products under development

Flip-chip (F2) available with coating (C2 suffix)

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ 1 mA (V)	Bandwidth (GHz)	C typ I/O to Gnd (pF)	C typ I/O to I/O (pF)	T _J max (°C)	Package
High speed interface protection										
SATAULC6-2P6	2	> 8/15	5	0.5	6	4.6	0.8	0.55	125	SOT-666
SATAULC6-2M6	2	> 8/15	5	0.5	6	4.8	0.8	0.55	125	μQFN-6L
DVIULC6-2P6	2	> 8/15	5	0.5	6	5.3	0.85	0.42	125	SOT-666
DVIULC6-2M6	2	> 8/15	5	0.5	6	5.9	0.85	0.42	125	μQFN-6L
HDMIULC6-2P6	2	> 8/15	5	0.5	6	5.3	0.6 (2)	0.42	125	SOT-666
HDMIULC6-2M6	2	> 8/15	5	0.5	6	5.9	0.6 (2)	0.42	125	μQFN-6L
DVIULC6-4SC6	4	> 8/15	5	0.5	6	5.2	0.85	0.42	125	SOT23-6L
HDMIULC6-4SC6	4	> 8/15	5	0.5	6	5.2	0.85	0.42	125	SOT23-6L
HDMIULC6-4F3	4	> 8/15	3	0.1	6	7	0.7 (2)	0.05	125	Flip-chip 400 μm
DSILC6-4P6	4	> 8/15	5	0.5	6	2.2	2 (3)	1.0 (3)	125	SOT-666
DSILC6-4F2	4	> 8/15	5	0.5	6	2.3	2.5 (3)	1.25 (3)	125	Flip-chip 500 μm
DSILC6-4SC6	4	> 8	5	0.5	6	0.83	4.1	2.1	125	SOT23-6L
HSP061-4NY8 (*)	4	> 8/15	5	0.1	6	5.8	0.6	tbd	125	μQFN-10L
HSP061-8M16 (*)	8	> 8/15	5	0.5	6	tbd	tbd	tbd	125	μDFN-16L

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V)	I _R (mA)	tDR (Ω)	C typ I/O to Gnd (pF)	T _J max (°C)	Package
Display port interface protection										
DPIULC6-6DJL	6	> 8/15	3	0.1	6	1	90 to 110	0.05	125	μQFN-18L

Notes:

(*) : Products under development

Flip-chip (F2) available with coating (C2 suffix)

Electrical over-stress protection (8/20 μ s): IEC 61000-4-5/IEC 61000-4-4/IEC 61000-4-2

Clamping diodes

Part number Unidirectional	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM}^{max} @ V_{RM} (μ A)	V_{BR}^{min} @ I_R (V) (mA)		V_{CL}^{max} @ I_{PP} 8/20 μ s (V) (A)		C typ @ 0 V bias (pF)	T_J^{max} (°C)	Package
350-watt Transils: low forward Transil in flip-chip										
LFTVS7-1F3	350	5.5	0.5	7	15	10	1	320	125	Flip-chip 400 μ m
LFTVS10-1F3	350	8	0.5	10	15	13	1	200	125	Flip-chip 400 μ m
LFTVS18-1F3	350	10	0.5	18	1	19	1	130	125	Flip-chip 400 μ m

Part number Unidirectional	IEC 61000-4-5 R = 12 Ω	I _{PP} @ 25 °C 8/20 μs	V _{RM}	I _{RM} max @ V _{RM}	V _{BR} @ I _R				V _{CL} max @ I _{PP}		Package
	(kV)	(A)	(V)	(μA)	(V) min	(V) typ	(V) max	(mA)	(V)	(A)	
Automation sensor tripolar protection											
SPT01-335DEE	1	2	33	1	36	38	40	1	46	0.3	QFN 3x3

Part number Unidirectional	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM}^{max} @ V_{RM} (μ A)	V_{BR}^{min} @ I_R (V) (mA)		V_{CL}^{max} @ I_{PP} 8/20 μ s (V) (A)		V_F^{max} @ 1 A (V)	T_J^{max} (°C)	Package
400-watt Transils: low forward voltage										
SMTY18AM	400	16	4000	18	1	20	1	0.42	150	STmite
SMTYF18A	400	16	100	18	1	22	20	0.42	150	StmiteFlat
600-watt Transils: low forward voltage										
SMTYF5.0A	4000	5	10	6.4	10	13.4	298	0.48	175	SMAflat
SMTYF12A	4000	12	20	13.2	1	22.9	157	0.48	175	SMAflat

Part number Unidirectional	Number of lines	Power 8/20 μs (W)	I _{PP} @ 25 °C 8/20 μs (A)	I _{PP} @ 150 °C 8/20 μs (V)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V) (mA)		V _{CL} max @ I _{PP} 8/20 μs (V) (A)		C typ @ 0 V bias (pF)	Package
24 A 8/20 μs: Power over Ethernet protection												
PEP01-5841	4	2700	24	15	58	4000	64.4	1	100	24	55	S0-8

Part number Unidirectional	Number of lines	Power 8/20 μ s (W)	I_{PP} @ 25 $^{\circ}$ C 8/20 μ s (A)	I_{PP} @ 150 $^{\circ}$ C 8/20 μ s (V)	V_{RM} (V)	I_{RM} max @ V_{RM} (μ A)	V_{CL} max @ I_{PP} 8/20 μ s (V) (A)		C typ @ 0 V bias (pF)	T_J max ($^{\circ}$ C)	Package
24 A 8/20 μ s: Ethernet data lines protection											
SLVU2.8-4A1	4	600	30	24	2.8	0.2	15	24	1.5	150	S0-8
SLVU2.8-8A1	8	600	30	24	2.8	0.2	15	24	3	150	S0-8

Part number Unidirectional	Number of lines	Power 8/20 μs (W)	I _{PP} @ 25 °C 8/20 μs (A)	I _{PP} @ 150 °C 8/20 μs (A)	V _{BR} (V)	I _{RM} max @ V _{RM} (μA)	V _{CL} max @ I _{PP} 8/20 μs (V) (A)		IEC 61000-4-2 (kV)	T _J (°C)	Package
40 A 8/20 μs: Industrial data lines protection											
ITA6V5B1RL	4	300	40	25	5	10	12	25	15	125	S0-8
ITA6V1U1RL	6	300	40	25	5	10	12	25	15	125	S0-8
ITA10B1RL	4	300	40	25	8	4	19	25	15	125	S0-8
ITA18B1RL	4	300	40	25	15	4	29	25	15	125	S0-8
ITA25B1RL	4	300	40	25	24	4	38	25	15	125	S0-8
ITA6V5B3RL	8	300	40	25	5	10	12	25	15	125	S0-20
ITA18B3RL	8	300	40	25	15	4	29	25	15	125	S0-20
ITA25B3RL	8	300	40	25	24	4	38	25	15	125	S0-20

Part number Unidirectional	IEC 61000-4-5 R = 12 Ω	I _{PP} @ 25°C 8/20 μs	V _{RM}	I _{RM} max @ V _{RM}	V _{BR} @ I _R				V _{CL} max @ I _{PP} R = 12 Ω		Package
	(kV)	(A)	(V)	(μA)	(V) min	(V) typ	(V) max	(mA)	(V)	(A)	
LNB voltage regulator protection											
LNBTVS3-220U	3	250	20	1	22	23.1	24.2	1	35	250	SMB
LNBTVS4-220S	4	331	20	1	22	23.1	24.2	1	35	331	SMC
LNBTVS4-221S	4	331	20	1	22	23.1	24.2	1	32	331	SMC
LNBTVS4-222S	4	331	20	1	22	23.1	24.2	1	30	331	SMC
LNBTVS6-220S	6	500	20	1	22	23.1	24.2	1	35	500	SMC
LNBTVS6-221S	6	500	20	1	22	23.1	24.2	1	32	500	SMC
LNBTVS4-304S	0.75 (1)	333	28	1	30	31.5	33	1	45	333 (1)	SMC
LNBTVS6-304S	1 (1)	500	28	1	30	31.5	33	1	45	500 (1)	SMC

Notes: (1) IEC 61000-4-5 R = 2 Ω

Electrical over-stress protection (8/20 μ s): IEC 61000-4-5/IEC 61000-4-4/IEC 61000-4-2

Clamping diodes (cont'd)

Part number Unidirectional	Power 8/20 μs (kW)	I _{pp} @ 25 °C 8/20 μs (A)	I _{pp} @ 150 °C 8/20 μs (V)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V) (mA)		V _{CL} max @ I _{pp} 8/20 μs (V) (A)		T _J max (°C)	Package
500 A 8/20μs: IEC 61000-4-5 protection											
STIEC45-24AS	21	500	410	24	0.2	26.7	1	42	500	150	SMC
STIEC45-26AS	23	500	410	26	0.2	28.9	1	45	500	150	SMC
STIEC45-27AS	24	500	410	27	0.2	30	1	47	500	150	SMC
STIEC45-28AS	25	500	410	28	0.2	31.1	1	49	500	150	SMC
STIEC45-30AS	28	500	410	30	0.2	33.3	1	55	500	150	SMC
STIEC45-33AS	30	500	410	33	0.2	36.7	1	59	500	150	SMC

Electrical over-stress protection (10/1000 μ s - 8/20 μ s): General purpose

Clamping diodes

Part number Unidirectional	Power 10/1000 μ s 25 $^{\circ}$ C (W)	Power 10/1000 μ s 150 $^{\circ}$ C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM} 25 $^{\circ}$ C (μ A) 85 $^{\circ}$ C (μ A)		V_{BR} min @ I_R (V) (mA)		V_{CL} max @ I_{PP} 8/20 μ s (V) (A)		T_J max ($^{\circ}$ C)	Package
	100-watt Transil™											
SMX1J7.5A	85	78	800	7.5	1	2	8.2	1	20	40	150	μ QFN-2L
400-watt Transils: Low profile package												
SMM4F5.0A-TR	400	200	2200	5	10	50	6.46	10	13.3	174	175	StmiteFlat
SMM4F6.0A-TR	400	200	2200	6	10	50	6.65	10	13.7	170	175	StmiteFlat
SMM4F6.5A-TR	400	200	2200	6.5	10	50	7.13	10	14.5	160	175	StmiteFlat
SMM4F8.5A-TR	400	200	2200	8.5	10	50	9.5	1	19.5	124	175	StmiteFlat
SMM4F10A-TR	400	200	2200	10	0.2	1	11.4	1	21.7	106	175	StmiteFlat
SMM4F12A-TR	400	200	2200	12	0.2	1	13.3	1	25.3	91	175	StmiteFlat

SMM4F13A-TR	400	200	2200	13	0.2	1	14.3	1	27.2	85	175	StmiteFlat
SMM4F15A-TR	400	200	2200	15	0.2	1	17.1	1	32.5	71	175	StmiteFlat
SMM4F18A-TR	400	200	2200	18	0.2	1	20.9	1	39.3	59	175	StmiteFlat
SMM4F20A-TR	400	200	2200	20	0.2	1	22.8	1	42.8	54	175	StmiteFlat
SMM4F24A-TR	400	200	2200	24	0.2	1	26.6	1	50	46	175	StmiteFlat
SMM4F26A-TR	400	200	2200	26	0.2	1	28.5	1	53.5	43	175	StmiteFlat
SMM4F28A-TR	400	200	2200	28	0.2	1	31.4	1	59	39	175	StmiteFlat
SMM4F33A-TR	400	200	2200	33	0.2	1	37.1	1	69.7	33	175	StmiteFlat
SMA4F5.0A-TR	400	200	2200	5	10	50	6.4	10	13.4	174	175	SMAflat

Part number		Power 10/1000 μ s	Power 10/1000 μ s	Power 8/20 μ s	V_{RM}	I_{RM} max @ V_{RM}		V_{BR} min @ I_R		V_{CL} max @ I_{PP} 8/20 μ s		T_J max	Package
Unidirectional	Bidirectional	25 $^{\circ}$ C (W)	150 $^{\circ}$ C (W)	(W)	(V)	25 $^{\circ}$ C (μ A)	85 $^{\circ}$ C (μ A)	(V)	(mA)	(V)	(A)	($^{\circ}$ C)	
400-watt Transils													
SMAJ5.0A-TR	SMAJ5.0CA-TR	400	270	2200	5	20	50	6.4	10	13.4	174	150	SMA
SMAJ6.0A-TR	SMAJ6.0CA-TR	400	270	2200	6	20	50	6.7	10	13.7	170	150	SMA
SMAJ6.5A-TR	SMAJ6.5CA-TR	400	270	2200	6.5	20	50	7.2	10	14.5	160	150	SMA
SMAJ8.5A-TR	SMAJ8.5CA-TR	400	270	2200	8.5	20	50	9.4	1	19.5	124	150	SMA
SMAJ10A-TR	SMAJ10CA-TR	400	270	2200	10	0.2	1	11.1	1	21.7	106	150	SMA
SMAJ12A-TR	SMAJ12CA-TR	400	270	2200	12	0.2	1	13.3	1	25.3	91	150	SMA
SMAJ13A-TR	SMAJ13CA-TR	400	270	2200	13	0.2	1	14.4	1	27.2	85	150	SMA
SMAJ15A-TR	SMAJ15CA-TR	400	270	2200	15	0.2	1	16.7	1	32.5	71	150	SMA
SMAJ18A-TR	SMAJ18CA-TR	400	270	2200	18	0.2	1	20	1	39.3	59	150	SMA
SMAJ20A-TR	SMAJ20CA-TR	400	270	2200	20	0.2	1	22.2	1	42.8	54	150	SMA
SMAJ22A-TR	SMAJ22CA-TR	400	270	2200	22	0.2	1	24.4	1	48.3	48	150	SMA
SMAJ24A-TR	SMAJ24CA-TR	400	270	2200	24	0.2	1	26.7	1	50	46	150	SMA
SMAJ26A-TR	SMAJ26CA-TR	400	270	2200	26	0.2	1	28.9	1	53.5	43	150	SMA
SMAJ28A-TR	SMAJ28CA-TR	400	270	2200	28	0.2	1	31.1	1	59	39	150	SMA
SMAJ30A-TR	SMAJ30CA-TR	400	270	2200	30	0.2	1	33.3	1	64.3	36	150	SMA
SMAJ33A-TR	SMAJ33CA-TR	400	270	2200	33	0.2	1	36.7	1	69.7	33	150	SMA
SMAJ40A-TR	SMAJ40CA-TR	400	270	2200	40	0.2	1	44.4	1	84	27	150	SMA
SMAJ43A-TR	SMAJ43CA-TR	400	270	2200	43	0.2	1	47.8	1	91	25	150	SMA
SMAJ48A-TR	SMAJ48CA-TR	400	270	2200	48	0.2	1	53.3	1	100	23	150	SMA
SMAJ58A-TR	SMAJ58CA-TR	400	270	2200	58	0.2	1	64.4	1	121	19	150	SMA
SMAJ70A-TR	SMAJ70CA-TR	400	270	2200	70	0.2	1	77.8	1	146	16	150	SMA
SMAJ85A-TR	SMAJ85CA-TR	400	270	2200	85	0.2	1	94.4	1	178	13	150	SMA
SMAJ130A-TR	SMAJ130CA-TR	400	270	2200	130	0.2	1	144	1	265	9	150	SMA
SMAJ154A-TR	SMAJ154CA-TR	400	270	2200	154	0.2	1	171	1	317	7	150	SMA
SMAJ170A-TR	SMAJ170CA-TR	400	270	2200	170	0.2	1	189	1	353	6.5	150	SMA
SMAJ188A-TR	SMAJ188CA-TR	400	270	2200	188	0.2	1	209	1	388	6	150	SMA

Electrical over-stress protection (10/1000 μ s - 8/20 μ s): General purpose

Clamping diodes (cont'd)

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM} (μ A)	V_{BR} min @ I_R (V) (mA)		V_{CL} max @ I_{PP} 8/20 μ s (V) (A)		T_J max (°C)	Package
Unidirectional	Bidirectional											
400-watt Transils : High-junction temperature in axial package												
BZW04-5V8	BZW04-5V8B	400	220	2200	5.8	1000	6.45	10	13.4	174	175	D0-15
BZW04-10	BZW04-10B	400	220	2200	10.2	5	11.4	1	21.7	106	175	D0-15
BZW04-13	BZW04-13B	400	220	2200	12.8	5	14.3	1	27.2	85	175	D0-15
BZW04-15	BZW04-15B	400	220	2200	15.3	1	17.1	1	32.5	71	175	D0-15
BZW04-26	BZW04-26B	400	220	2200	25.6	1	28.5	1	53.5	43	175	D0-15
BZW04-28	BZW04-28B	400	220	2200	28.2	1	31.4	1	59.0	39	175	D0-15
BZW04-31	BZW04-31B	400	220	2200	30.8	1	34.2	1	64.3	36	175	D0-15
BZW04-33	BZW04-33B	400	220	2200	33.3	1	37.1	1	69.7	33	175	D0-15
BZW04-48	BZW04-48B	400	220	2200	47.8	1	53.2	1	100	23	175	D0-15
BZW04-239	BZW04-239B	400	220	2200	239	1	266	1	494	4.6	175	D0-15
BZW04-299	BZW04-299B	400	220	2200	299	1	332	1	618	3.7	175	D0-15
BZW04-342	BZW04-342B	400	220	2200	342	1	380	1	706	3.2	175	D0-15
BZW04-376	BZW04-376B	400	220	2200	376	1	418	1	776	3.0	175	D0-15

Part number		Power 10/1000 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM} (μ A)	V_{BR} min @ I_R (V) (mA)		V_{CL} max @ I_{PP} 10/1000 μ s (V) (A)		V_F max @ 1 A (V)	T_J max (°C)	Package
Unidirectional											
600-watt Transils: Low forward voltage											
SMTY5.0A		600	5	10	6.4	10	9	43.5	0.48	150	SMA
SMTY12A		600	12	20	13.2	1	18.5	31	0.48	150	SMA

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM} 25 °C (μ A) 85 °C (μ A)		V_{BR} min @ I_R (V) (mA)		V_{CL} max @ I_{PP} 8/20 μ s (V) (A)		T_J max (°C)	Package
Unidirectional	Bidirectional												
600-watt Transils													
SM6T6V8A	SM6T6V8CA	600	515	4000	5.8	20	50	6.45	10	13.4	298	150	SMB
SM6T7V5A	SM6T7V5CA	600	515	4000	6.4	20	50	7.13	10	14.5	276	150	SMB

SM6T10A	SM6T10CA	600	515	4000	8.55	20	50	9.5	1	18.6	215	150	SMB
SM6T12A	SM6T12CA	600	515	4000	10.2	0.2	1	11.4	1	21.7	184	150	SMB
SM6T15A	SM6T15CA	600	515	4000	12.8	0.2	1	14.3	1	27.2	147	150	SMB
SM6T18A	SM6T18CA	600	515	4000	15.3	0.2	1	17.1	1	32.5	123	150	SMB
SM6T22A	SM6T22CA	600	515	4000	18.8	0.2	1	20.9	1	39.3	102	150	SMB
SM6T24A	SM6T24CA	600	515	4000	20.5	0.2	1	22.8	1	42.8	93	150	SMB
SM6T27A	SM6T27CA	600	515	4000	23.1	0.2	1	25.7	1	48.3	83	150	SMB
SM6T30A	SM6T30CA	600	515	4000	25.6	0.2	1	28.5	1	53.5	75	150	SMB
SM6T33A	SM6T33CA	600	515	4000	28.2	0.2	1	31.4	1	59	68	150	SMB
SM6T36A	SM6T36CA	600	515	4000	30.8	0.2	1	34.2	1	64.3	62	150	SMB
SM6T39A	SM6T39CA	600	515	4000	33.3	0.2	1	37.1	1	69.7	57	150	SMB
SM6T56A	SM6T56CA	600	515	4000	47.6	0.2	1	53.2	1	100	40	150	SMB
SM6T68A	SM6T68CA	600	515	4000	58.1	0.2	1	64.6	1	121	33	150	SMB
SM6T100A	SM6T100CA	600	515	4000	85.5	0.2	1	95	1	178	22.5	150	SMB
SM6T150A	SM6T150CA	600	515	4000	128	0.2	1	143	1	265	15	150	SMB
SM6T200A	SM6T200CA	600	515	4000	171	0.2	1	190	1	353	11.3	150	SMB
SM6T220A	SM6T220CA	600	515	4000	188	0.2	1	209	1	388	10.3	150	SMB

Part number		Power 10/1000 μ s 25 $^{\circ}$ C (W)	Power 10/1000 μ s 150 $^{\circ}$ C (W)	Power 8/20 μ s (W)	V _{RM} (V)	I _{RM} max @ V _{RM} (μ A)	V _{BR} min @ I _R (V) (mA)		V _{CL} max @ I _{PP} 8/20 μ s (V) (A)		T _J max ($^{\circ}$ C)	Package
Unidirectional	Bidirectional											
600-watt Transils: High junction temperature in axial package												
P6KE6V8A	P6KE6V8CA	600	330	4000	5.8	1000	6.45	10	13.4	298	175	DO-15
P6KE7V5A	P6KE7V5CA	600	330	4000	6.4	500	7.13	10	14.5	276	175	DO-15
P6KE15A	P6KE15CA	600	330	4000	12.8	1	14.3	1	27.2	147	175	DO-15
P6KE18A	P6KE18CA	600	330	4000	15.3	1	17.1	1	32.5	123	175	DO-15
P6KE27A	P6KE27CA	600	330	4000	23.1	1	25.7	1	48.3	83	175	DO-15
P6KE30A	P6KE30CA	600	330	4000	25.6	1	28.5	1	53.5	75	175	DO-15
P6KE33A	P6KE33CA	600	330	4000	28.2	1	31.4	1	59	68	175	DO-15
P6KE36A	P6KE36CA	600	330	4000	30.8	1	34.2	1	64.3	62	175	DO-15
P6KE39A	P6KE39CA	600	330	4000	33.3	1	37.1	1	69.7	57	175	DO-15
P6KE56A	P6KE56CA	600	330	4000	47.8	1	53.2	1	100	40	175	DO-15
P6KE68A	P6KE68CA	600	330	4000	58.1	1	64.6	1	121	33	175	DO-15
P6KE82A	P6KE82CA	600	330	4000	70.1	1	77.9	1	146	27	175	DO-15
P6KE200A	P6KE200CA	600	330	4000	171	1	190	1	353	11.3	175	DO-15
P6KE250A	P6KE250CA	600	330	4000	213	1	237	1	442	9	175	DO-15
P6KE300A	P6KE300CA	600	330	4000	256	1	285	1	529	7.6	175	DO-15
P6KE400A	P6KE400CA	600	330	4000	342	1	380	1	706	5.7	175	DO-15
P6KE440A	P6KE440CA	600	330	4000	376	1	418	1	776	5.2	175	DO-15

Electrical over-stress protection (10/1000 μ s - 8/20 μ s): General purpose

Clamping diodes (cont'd)

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM}		V_{BR} min @ I_R		V_{CL} max @ I_{PP} 8/20 μ s		T_J max (°C)	Package
Unidirectional	Bidirectional					25 °C (μ A)	85 °C (μ A)	(V)	(mA)	(V)	(A)		
600-watt Transils													
SMLVT3V3	-	600	330	2000	3.3	200	-	4.1	1	10.3	200	150	SMB
SMBJ5.0A-TR	SMBJ5.0CA-TR	600	515	4000	5	20	50	6.4	10	13.4	298	150	SMB
SMBJ6.0A-TR	SMBJ6.0CA-TR	600	515	4000	6	20	50	6.7	10	13.7	290	150	SMB
SMBJ6.5A-TR	SMBJ6.5CA-TR	600	515	4000	6.5	20	50	7.2	10	14.5	276	150	SMB
SMBJ10A-TR	SMBJ10CA-TR	600	515	4000	10	20	50	11.1	1	21.7	184	150	SMB
SMBJ12A-TR	SMBJ12CA-TR	600	515	4000	12	0.2	1	13.3	1	25.3	157	150	SMB
SMBJ13A-TR	SMBJ13CA-TR	600	515	4000	13	0.2	1	14.4	1	27.2	147	150	SMB
SMBJ15A-TR	SMBJ15CA-TR	600	515	4000	15	0.2	1	16.7	1	32.5	123	150	SMB
SMBJ18A-TR	SMBJ18CA-TR	600	515	4000	18	0.2	1	20	1	39.3	102	150	SMB
SMBJ22A-TR	SMBJ22CA-TR	600	515	4000	22	0.2	1	24.4	1	48.3	83	150	SMB
SMBJ24A-TR	SMBJ24CA-TR	600	515	4000	24	0.2	1	26.7	1	50	80	150	SMB
SMBJ26A-TR	SMBJ26CA-TR	600	515	4000	26	0.2	1	28.9	1	53.5	75	150	SMB
SMBJ28A-TR	SMBJ28CA-TR	600	515	4000	28	0.2	1	31.1	1	59	68	150	SMB
SMBJ30A-TR	SMBJ30CA-TR	600	515	4000	30	0.2	1	33.3	1	64.3	62	150	SMB
SMBJ33A-TR	SMBJ33CA-TR	600	515	4000	33	0.2	1	36.7	1	69.7	57	150	SMB
SMBJ36A-TR	SMBJ36CA-TR	600	515	4000	36	0.2	1	40	1	76	52	150	SMB
SMBJ40A-TR	SMBJ40CA-TR	600	515	4000	40	0.2	1	44.4	1	84	48	150	SMB
SMBJ48A-TR	SMBJ48CA-TR	600	515	4000	48	0.2	1	53.3	1	100	40	150	SMB
SMBJ58A-TR	SMBJ58CA-TR	600	515	4000	58	0.2	1	64.4	1	121	33	150	SMB
SMBJ70A-TR	SMBJ70CA-TR	600	515	4000	70	0.2	1	77.8	1	146	27	150	SMB
SMBJ85A-TR	SMBJ85CA-TR	600	515	4000	85	0.2	1	94.4	1	178	22.5	150	SMB
SMBJ130A-TR	SMBJ130CA-TR	600	515	4000	130	0.2	1	144	1	265	15	150	SMB
SMBJ154A-TR	SMBJ154CA-TR	600	515	4000	154	0.2	1	171	1	317	12.6	150	SMB
SMBJ170A-TR	SMBJ170CA-TR	600	515	4000	170	0.2	1	189	1	353	11.3	150	SMB
SMBJ188A-TR	SMBJ188CA-TR	600	515	4000	188	0.2	1	209	1	388	10.3	150	SMB

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V _{RM} (V)	I _{RM} max @ V _{RM} (μ A)		V _{BR} min @ I _R (V) (mA)		V _{CL} max @ I _{PP} 8/20 μ s (V) (A)		T _J max (°C)	Package
Unidirectional													
600-watt Transils: Low profile package													
SMBF5.0A-TR		600	300	4000	5	800		6.4	10	13.4	298	150	SMBflat
SMBF13A-TR		600	300	4000	13	0.2		14.4	1	27.2	147	150	SMBflat

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V _{RM} (V)	I _{RM} max @ V _{RM} 25 °C (μ A) 85 °C (μ A)		V _{BR} min @ I _R (V) (mA)		V _{CL} max @ I _{PP} 8/20 μ s (V) (A)		T _J max (°C)	Package
Unidirectional	Bidirectional												
600-watt Transils: Low clamping voltage													
SMA6J5.0A-TR	SMA6J5.0CA-TR	600	300	4000	5	10	50	6.4	10	13.4	298	175	SMA
SMA6J6.0A-TR	SMA6J6.0CA-TR	600	300	4000	6	10	50	6.7	10	13.7	290	175	SMA
SMA6J6.5A-TR	SMA6J6.5CA-TR	600	300	4000	6.5	10	50	7.2	10	14.5	276	175	SMA
SMA6J8.5A-TR	SMA6J8.5CA-TR	600	300	4000	8.5	10	50	9.4	1	18.7	205	175	SMA
SMA6J10A-TR	SMA6J10CA-TR	600	300	4000	10	0.2	1	11.1	1	19.6	184	175	SMA
SMA6J12A-TR	SMA6J12CA-TR	600	300	4000	12	0.2	1	13.3	1	23.5	157	175	SMA
SMA6J13A-TR	SMA6J13CA-TR	600	300	4000	13	0.2	1	14.4	1	23.9	147	175	SMA
SMA6J15A-TR	SMA6J15CA-TR	600	300	4000	15	0.2	1	16.7	1	27.7	123	175	SMA
SMA6J18A-TR	SMA6J18CA-TR	600	300	4000	18	0.2	1	20	1	33.2	102	175	SMA
SMA6J20A-TR	SMA6J20CA-TR	600	300	4000	20	0.2	1	22.2	1	36.8	93	175	SMA
SMA6J24A-TR	SMA6J24CA-TR	600	300	4000	24	0.2	1	26.7	1	44.3	80	175	SMA
SMA6J26A-TR	SMA6J26CA-TR	600	300	4000	26	0.2	1	28.9	1	47.9	75	175	SMA
SMA6J28A-TR	SMA6J28CA-TR	600	300	4000	28	0.2	1	31.1	1	51.6	68	175	SMA
SMA6J33A-TR	SMA6J33CA-TR	600	300	4000	33	0.2	1	36.7	1	60.8	57	175	SMA
SMA6J40A-TR	SMA6J40CA-TR	600	300	4000	40	0.2	1	44.4	1	73.6	48	175	SMA
SMA6J48A-TR	SMA6J48CA-TR	600	300	4000	48	0.2	1	53.3	1	88.4	40	175	SMA
SMA6J58A-TR	SMA6J58CA-TR	600	300	4000	58	0.2	1	64.4	1	100	33	175	SMA
SMA6J70A-TR	SMA6J70CA-TR	600	300	4000	70	0.2	1	77.8	1	120	27	175	SMA
SMA6J85A-TR	SMA6J85CA-TR	600	300	4000	85	0.2	1	94	1	146	22.5	175	SMA
SMA6J100A-TR	SMA6J100CA-TR	600	300	4000	100	0.2	1	111	1	172	19	175	SMA
SMA6J130A-TR	SMA6J130CA-TR	600	300	4000	130	0.2	1	144	1	223	15	175	SMA
SMA6J154A-TR	SMA6J154CA-TR	600	300	4000	154	0.2	1	171	1	265	12.6	175	SMA
SMA6J170A-TR	SMA6J170CA-TR	600	300	4000	170	0.2	1	189	1	292	11.3	175	SMA
SMA6J188A-TR	SMA6J188CA-TR	600	300	4000	188	0.2	1	209	1	323	10.3	175	SMA

Electrical over-stress protection (10/1000 μ s - 8/20 μ s): General purpose

Clamping diodes (cont'd)

Part number	Power 10/1000 μ s	Power 10/1000 μ s	Power 8/20 μ s	V_{RM}	I_{RM} max @ V_{RM}		V_{BR} min @ I_R		V_{CL} max @ I_{PP} 8/20 μ s		T_J max	Package
Unidirectional	25 °C (W)	150 °C (W)	(W)	(V)	25 °C (μ A)	85 °C (μ A)	(V)	(mA)	(V)	(A)	(°C)	
600-watt Transils: High junction temperature and low clamping voltage in low profile package												
SMA6F5.0A-TR	600	300	4000	5	10	50	6.4	10	13.4	298	175	SMAflat
SMA6F12AVCL	600	300	4000	12	0.2	1	13.3	1	22.9	157	175	SMAflat
SMA6F13A-TR	600	300	4000	13	0.2	1	14.4	1	23.9	147	175	SMAflat

Part number		Power 10/1000 μs	Power 10/1000 μs	Power 8/20 μs	V _{RM}	I _{RM} max @ V _{RM}	V _{BR} min @ I _R		V _{CL} max @ I _{PP} 8/20 μs		T _J max	Package
Unidirectional	Bidirectional	25 °C (W)	150 °C (W)	(W)	(V)	(μA)	(V)	(mA)	(V)	(A)	(°C)	
600-watt Transils in axial package												
BZW06-5V8	BZW06-5V8B	600	330	4000	5.8	1000	6.45	10	13.4	298	175	DO-15
BZW06-6V4	BZW06-6V4B	600	330	4000	6.4	500	7.13	10	14.5	276	175	DO-15
BZW06-10	BZW06-10B	600	330	4000	10.2	5	11.4	1	21.7	184	175	DO-15
BZW06-13	BZW06-13B	600	330	4000	12.8	5	14.3	1	27.2	147	175	DO-15
BZW06-15	BZW06-15B	600	330	4000	15.3	1	17.1	1	32.5	123	175	DO-15
BZW06-19	BZW06-19B	600	330	4000	18.8	1	20.9	1	39.3	102	175	DO-15
BZW06-23	BZW06-23B	600	330	4000	23.1	1	25.7	1	48.3	83	175	DO-15
BZW06-26	BZW06-26B	600	330	4000	25.6	1	28.5	1	53.5	75	175	DO-15
BZW06-28	BZW06-28B	600	330	4000	28.2	1	31.4	1	59.0	68	175	DO-15
BZW06-31	BZW06-31B	600	330	4000	30.8	1	34.2	1	64.3	62	175	DO-15
BZW06-33	BZW06-33B	600	330	4000	33.3	1	37.1	1	69.7	57	175	DO-15
BZW06-48	BZW06-48B	600	330	4000	47.8	1	53.2	1	100	40	175	DO-15
BZW06-273	BZW06-273B	600	330	4000	273	1	304	1	564	7.1	175	DO-15
BZW06-342	BZW06-342B	600	330	4000	342	1	380	1	706	5.7	175	DO-15
BZW06-376	BZW06-376B	600	330	4000	376	1	418	1	776	5.7	175	DO-15

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V _{RM} (V)	I _{RM} max @ V _{RM}		V _{BR} min @ I _R		V _{CL} max @ I _{PP} 8/20 μ s		T _J max (°C)	Package
Unidirectional	Bidirectional					25 °C (μ A)	85 °C (μ A)	(V)	(mA)	(V)	(A)		
1500-watt Transils													
SM5908	-	1500	1250	-	5	200	-	6	1	7.6	30	150	SMC
SM15T6V8A	SM15T6V8CA	1500	1250	10000	5.8	500	2000	6.45	10	13.4	746	150	SMC
SM15T7V5A	SM15T7V5CA	1500	1250	10000	6.4	250	1000	7.13	10	14.5	690	150	SMC
SM15T10A	SM15T10CA	1500	1250	10000	8.55	10	50	9.5	1	18.6	538	150	SMC
SM15T12A	SM15T12CA	1500	1250	10000	10.2	0.2	1	11.4	1	21.7	461	150	SMC
SM15T15A	SM15T15CA	1500	1250	10000	12.8	0.2	1	14.3	1	27.2	368	150	SMC
SM15T18A	SM15T18CA	1500	1250	10000	15.3	0.2	1	17.1	1	32.5	308	150	SMC
SM15T22A	SM15T22CA	1500	1250	10000	18.8	0.2	1	20.9	1	39.3	254	150	SMC
SM15T24A	SM15T24CA	1500	1250	10000	20.5	0.2	1	22.8	1	42.8	234	150	SMC
SM15T27A	SM15T27CA	1500	1250	10000	23.1	0.2	1	25.7	1	48.3	207	150	SMC
SM15T30A	SM15T30CA	1500	1250	10000	25.6	0.2	1	28.5	1	53.5	187	150	SMC
SM15T33A	SM15T33CA	1500	1250	10000	28.2	0.2	1	31.4	1	59	169	150	SMC
SM15T36A	SM15T36CA	1500	1250	10000	30.8	0.2	1	34.2	1	64.3	156	150	SMC
SM15T39A	SM15T39CA	1500	1250	10000	33.3	0.2	1	37.1	1	69.7	143	150	SMC
SM15T68A	SM15T68CA	1500	1250	10000	58.1	0.2	1	64.6	1	121	83	150	SMC
SM15T100A	SM15T100CA	1500	1250	10000	85.5	0.2	1	95	1	178	56	150	SMC
SM15T150A	SM15T150CA	1500	1250	10000	128	0.2	1	143	1	265	38	150	SMC
SM15T200A	SM15T200CA	1500	1250	10000	171	0.2	1	190	1	353	28	150	SMC
SM15T220A	SM15T220CA	1500	1250	10000	188	0.2	1	209	1	388	26	150	SMC
SMCJ5.0A-TR	SMCJ5.0CA-TR	1500	1250	10000	5	500	2000	6.4	10	13.4	746	150	SMC
SMCJ6.0A-TR	SMCJ6.0CA-TR	1500	1250	10000	6	500	2000	6.7	10	13.7	730	150	SMC
SMCJ6.5A-TR	SMCJ6.5CA-TR	1500	1250	10000	6.5	250	1000	7.2	10	14.5	690	150	SMC
SMCJ8.5A-TR	SMCJ8.5CA-TR	1500	1250	10000	8.5	10	50	9.4	1	19.5	512	150	SMC
SMCJ10A-TR	SMCJ10CA-TR	1500	1250	10000	10	0.2	1	11.1	1	21.7	461	150	SMC
SMCJ12A-TR	SMCJ12CA-TR	1500	1250	10000	12	0.2	1	13.3	1	25.3	394	150	SMC
SMCJ13A-TR	SMCJ13CA-TR	1500	1250	10000	13	0.2	1	14.4	1	27.2	368	150	SMC
SMCJ15A-TR	SMCJ15CA-TR	1500	1250	10000	15	0.2	1	16.7	1	32.5	308	150	SMC
SMCJ18A-TR	SMCJ18CA-TR	1500	1250	10000	18	0.2	1	20	1	39.3	254	150	SMC
SMCJ22A-TR	SMCJ22CA-TR	1500	1250	10000	22	0.2	1	24.4	1	48.3	207	150	SMC
SMCJ24A-TR	SMCJ24CA-TR	1500	1250	10000	24	0.2	1	26.7	1	50	200	150	SMC
SMCJ26A-TR	SMCJ26CA-TR	1500	1250	10000	26	0.2	1	28.9	1	53.5	187	150	SMC
SMCJ28A-TR	SMCJ28CA-TR	1500	1250	10000	28	0.2	1	31.1	1	59	169	150	SMC

Electrical over-stress protection (10/1000 μ s - 8/20 μ s): General purpose

Clamping diodes (cont'd)

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM}		V_{BR} min @ I_R		V_{CL} max @ I_{PP} 8/20 μ s		T_J max (°C)	Package
Unidirectional	Bidirectional					25 °C (μ A)	85 °C (μ A)	(V)	(mA)	(V)	(A)		
1500-watt Transils													
SMCJ30A-TR	SMCJ30CA-TR	1500	1250	10000	30	0.2	1	33.3	1	64.3	156	150	SMC
SMCJ33A-TR	SMCJ33CA-TR	1500	1250	10000	33	0.2	1	36.7	1	69.7	143	150	SMC
SMCJ40A-TR	SMCJ40CA-TR	1500	1250	10000	40	0.2	1	44.4	1	84	119	150	SMC
SMCJ48A-TR	SMCJ48CA-TR	1500	1250	10000	48	0.2	1	53.3	1	100	100	150	SMC
SMCJ58A-TR	SMCJ58CA-TR	1500	1250	10000	58	0.2	1	64.4	1	121	83	150	SMC
SMCJ70A-TR	SMCJ70CA-TR	1500	1250	10000	70	0.2	1	77.8	1	146	69	150	SMC
SMCJ85A-TR	SMCJ85CA-TR	1500	1250	10000	85	0.2	1	94.4	1	178	56	150	SMC
SMCJ130A-TR	SMCJ130CA-TR	1500	1250	10000	130	0.2	1	144	1	265	38	150	SMC
SMCJ154A-TR	SMCJ154CA-TR	1500	1250	10000	154	0.2	1	171	1	317	31.5	150	SMC
SMCJ170A-TR	SMCJ170CA-TR	1500	1250	10000	170	0.2	1	189	1	353	28	150	SMC
SMCJ188A-TR	SMCJ188CA-TR	1500	1250	10000	188	0.2	1	209	1	388	26	150	SMC

Part number		Power 10/1000 μ s 25 °C (W)	Power 10/1000 μ s 150 °C (W)	Power 8/20 μ s (W)	V_{RM} (V)	I_{RM} max @ V_{RM} (μ A)	V_{BR} min @ I_R		V_{CL} max @ I_{PP} 8/20 μ s		T_J max (°C)	Package
Unidirectional	Bidirectional						(V)	(mA)	(V)	(A)		
1500-watt Transils: High junction temperature in axial package												
1N5908	-	1500	825	-	5	300	6	1	7.6	30	175	DO-201
1.5KE6V8A	1.5KE6V8CA	1500	825	10000	5.8	1000	6.45	10	13.4	746	175	DO-201
1.5KE7V5A	1.5KE7V5CA	1500	825	10000	6.4	500	7.13	10	14.5	690	175	DO-201
1.5KE12A	1.5KE12CA	1500	825	10000	10.2	5	11.4	1	21.7	461	175	DO-201
1.5KE15A	1.5KE15CA	1500	825	10000	12.8	1	14.3	1	27.2	368	175	DO-201
1.5KE18A	1.5KE18CA	1500	825	10000	15.3	1	17.1	1	32.5	308	175	DO-201
1.5KE22A	1.5KE22CA	1500	825	10000	18.8	1	20.9	1	39.3	254	175	DO-201
1.5KE24A	1.5KE24CA	1500	825	10000	20.5	1	22.8	1	42.8	234	175	DO-201
1.5KE30A	1.5KE30CA	1500	825	10000	25.6	1	28.5	1	53.5	187	175	DO-201
1.5KE33A	1.5KE33CA	1500	825	10000	28.2	1	31.4	1	59.0	169	175	DO-201
1.5KE36A	1.5KE36CA	1500	825	10000	30.8	1	34.2	1	64.3	156	175	DO-201
1.5KE39A	1.5KE39CA	1500	825	10000	33.3	1	37.1	1	69.7	143	175	DO-201

1.5KE47A	1.5KE47CA	1500	825	10000	40.2	1	44.7	1	84	119	175	DO-201
1.5KE56A	1.5KE56CA	1500	825	10000	47.8	1	53.2	1	100	100	175	DO-201
1.5KE62A	1.5KE62CA	1500	825	10000	53	1	58.9	1	111	90	175	DO-201
1.5KE68A	1.5KE68CA	1500	825	10000	58.1	1	64.6	1	121	83	175	DO-201
1.5KE82A	1.5KE82CA	1500	825	10000	70.1	1	77.9	1	146	69	175	DO-201
1.5KE100A	1.5KE100CA	1500	825	10000	85.5	1	95	1	178	56	175	DO-201
1.5KE180A	1.5KE180CA	1500	825	10000	154	1	171	1	317	31.5	175	DO-201
1.5KE200A	1.5KE200CA	1500	825	10000	171	1	190	1	353	28	175	DO-201
1.5KE220A	1.5KE220CA	1500	825	10000	188	1	209	1	388	26	175	DO-201
1.5KE250A	1.5KE250CA	1500	825	10000	213	1	237	1	442	23	175	DO-201
1.5KE300A	1.5KE300CA	1500	825	10000	256	1	285	1	529	19	175	DO-201
1.5KE350A	1.5KE350CA	1500	825	10000	299	1	332	1	618	16	175	DO-201
1.5KE400A	1.5KE400CA	1500	825	10000	342	1	380	1	706	14	175	DO-201
1.5KE440A	1.5KE440CA	1500	825	10000	376	1	418	1	776	13	175	DO-201

Part number		Power 10/1000 μ s 25 $^{\circ}$ C (W)	Power 10/1000 μ s 150 $^{\circ}$ C (W)	Power 8/20 μ s (W)	V _{RM} (V)	I _{RM} max @ V _{RM} (μ A)	V _{BR} min @ I _R		V _{CL} max @ I _{PP} 8/20 μ s		T _J max ($^{\circ}$ C)	Package
Unidirectional	Bidirectional						(V)	(mA)	(V)	(A)		
5000-watt Transils: High junction temperature in axial package												
BZW50-10	BZW50-10B	5000	2750	60000	10	5	11.1	1	23.4	2564	175	R6
BZW50-15	BZW50-15B	5000	2750	60000	15	5	16.6	1	35	1714	175	R6
BZW50-22	BZW50-22B	5000	2750	60000	22	5	24.4	1	51	1177	175	R6
BZW50-27	BZW50-27B	5000	2750	60000	27	5	30	1	62	968	175	R6
BZW50-33	BZW50-33B	5000	2750	60000	33	5	36.6	1	76	789	175	R6
BZW50-39	BZW50-39B	5000	2750	60000	39	5	43.3	1	90	667	175	R6
BZW50-47	BZW50-47B	5000	2750	60000	47	5	52	1	108	556	175	R6
BZW50-56	BZW50-56B	5000	2750	60000	56	5	62.2	1	129	465	175	R6
BZW50-68	BZW50-68B	5000	2750	60000	68	5	75.6	1	157	382	175	R6
BZW50-82	BZW50-82B	5000	2750	60000	82	5	91	1	189	317	175	R6
BZW50-100	BZW50-100B	5000	2750	60000	100	5	111	1	228	263	175	R6
BZW50-120	BZW50-120B	5000	2750	60000	120	5	133	1	274	219	175	R6
BZW50-150	BZW50-150B	5000	2750	60000	150	5	166	1	343	175	175	R6
BZW50-180	BZW50-180B	5000	2750	60000	180	5	200	1	410	146	175	R6

Automotive grade devices

Qualified according to AEC-Q100

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V) (mA)		C typ @ 0 V bias (pF)	T _J max (°C)	Package
Unidirectional clamping arrays									
ESDA14V2LY (*)	2	> 8/15	12	5	14.2	1	90	150	SOT-23
ESDA25LY (*)	2	> 8/15	24	1	25	1	50	150	SOT-23
ESDA14V2SC5Y (*)	4	> 8/15	12	5	14.2	1	100	150	SOT23-5L
Bidirectional clamping arrays									
ESDALC5-1BM2Y (*)	1	> 8/15	3	0.1	6.0	1	7	125	SOD-882

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ 15 V (μA)	V _F max @ 50 mA (V)	C max @ 5 V (pF)	Package
Rail-to-rail protection							
DALC208SC6Y (*)	4	> 8/15	9	1	1.2	7	SOT23-6L

Part number	Number of lines	IEC 61000-4-2 contact/air (kV)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _R (V) (mA)		C typ I/O to Gnd (pF)	C typ I/O to I/O (pF)	T _J max (°C)	Package
High-speed interface protection										
USBLC6-4SC6Y (*)	4	> 8/15	5	2	6	1	3	1.85	125	SOT23-6L
DVIULC6-4SC6Y (*)	4	> 8/15	5	0.5	6	1	0.85	0.42	125	SOT23-6L
HDMIULC6-4SC6Y (*)	4	> 8/15	5	0.5	6	1	0.85	0.42	125	SOT23-6L
DSILC6-4SC6Y (*)	4	> 8	5	2	6	1	3	1.85	125	SOT-666

Notes:

(*) : Products under development

Part number Bidirectional	Power 8/20 μ s	V_{RM}	I_{RM} max @ V_{RM}	V_{BR} @ I_R			V_{CL} max @ I_{PP} 8/20 μ s		C max @ 0 V	T_j max	Package
	(W)	(V)	(μ A)	V_{BR}^+ (V)	V_{BR}^- (V)	(mA)	(V)	(A)	(pF)	($^{\circ}$ C)	
160-watt Transil for LIN bus											
ESDLIN1524BJY (*)	160/200	15/24	0.5	17.1	25.4	5	35	5	20	125	SOD-323

Part number	I_{PP} 10 μ s/40 ms	Power 10/1000 μ s	I_R	I_{RM} max @ V_{RM}		V_{BR} max @ I_R		V_{CL} max	C typ	T_j max	Package
	(A)	(W)	(A)	$T_c = 25\text{ }^{\circ}\text{C}$ (μ A)	$T_c = 85\text{ }^{\circ}\text{C}$ (μ A)	(V)	(mA)	(V)	(nF)	($^{\circ}\text{C}$)	
Automotive Transils for reverse battery overvoltage protection											
RBO08-40GY-TR (*)	8	600	8	10	50	32	1	40	-	150	D ² PAK
RBO40-40GY-TR (*)	20	1500	40	10	100	32	1	40	8	150	D ² PAK

Part number		Power 10/1000 μ s 25 $^{\circ}$ C (W)	Power 10/1000 μ s 150 $^{\circ}$ C (W)	Power 8/20 μ s (W)	I_{RM} max @ V_{RM} $T_c = 25^{\circ}$ C (μ A) $T_c = 85^{\circ}$ C (μ A)		V_{BR} min, V_{RM}^* V_{CL}^* I_{PP}	T_j max ($^{\circ}$ C)	Package
Unidirectional	Bidirectional								
Automotive Transils									
SMAJxxAY-TR (*)	SMAJxxCAY-TR (*)	400	270	2200	0.2	1	Refer to standard devices for parameters	150	SMA
SMA6JxxAY-TR (*)	SMA6JxxCAY-TR (*)	600	300	4000	0.2	1	Refer to standard devices for parameters	175	SMA
SMBJxxAY-TR (*)	SMBJxxCAY-TR (*)	600	515	4000	0.2	1	Refer to standard devices for parameters	150	SMB
SM6TxxAY-TR (*)	SM6TxxCAY-TR (*)	600	515	4000	0.2	1	Refer to standard devices for parameters	150	SMB
SM15TxxAY-TR (*)	SM15TxxCAY-TR (*)	1500	1250	4000	0.2	1	Refer to standard devices for parameters	150	SMC

Notes:

(*) : Products under development

Lightning surge protection: ITU-T Kseries/Telcordia GR-1089

Crowbar diodes

Part number	I _{PP} 10/1000 μs GR-1089 (A)	I _{PP} 2/10 μs GR-1089 (A)	I _{PP} 5/310 μs ITU-T K20/21 (A)	V _{RM} (V)	V _{BR} @ I _R (V) (μA)		V _{BO} max (V)	C typ @ V _R = 2 V (pF)	I _H min (mA)	Package
Surge suppressors for telecom intrabuilding and terminals in SMA (30 A)										
SMP30-62	30	100	40	56	62	5	82	40	150	SMA
SMP30-68	30	100	40	61	68	5	90	40	150	SMA
SMP30-100	30	100	40	90	100	5	133	35	150	SMA
SMP30-120	30	100	40	108	120	5	160	30	150	SMA
SMP30-130	30	100	40	117	130	5	173	30	150	SMA
SMP30-180	30	100	40	162	180	5	240	25	150	SMA
SMP30-200	30	100	40	180	200	5	267	25	150	SMA
SMP30-220	30	100	40	198	220	5	293	20	150	SMA
SMP30-240	30	100	40	216	240	5	320	20	150	SMA
SMP30-270	30	100	40	243	270	5	360	20	150	SMA
Surge suppressors for telecom terminals in SMA (50 A)										
SMP50-62	50	100	65	56	62	5	82	40	150	SMA
SMP50-68	50	100	65	61	68	5	90	40	150	SMA
SMP50-100	50	100	65	90	100	5	133	35	150	SMA
SMP50-120	50	100	65	108	120	5	160	30	150	SMA
SMP50-130	50	100	65	117	130	5	173	30	150	SMA
SMP50-180	50	100	65	162	180	5	240	25	150	SMA
SMP50-200	50	100	65	180	200	5	267	25	150	SMA
SMP50-220	50	100	65	198	220	5	293	25	150	SMA
SMP50-240	50	100	65	216	240	5	320	25	150	SMA
SMP50-270	50	100	65	243	270	5	360	25	150	SMA
SMP50-320	50	100	65	290	320	5	400	25	150	SMA
Surge suppressors for telecom terminals in SMB (50 A)										
SMTPA62	50	100	65	56	62	5	82	40	150	SMB
SMTPA68	50	100	65	61	68	5	90	40	150	SMB
SMTPA100	50	100	65	90	100	5	133	35	150	SMB
SMTPA120	50	100	65	108	120	5	160	30	150	SMB
SMTPA130	50	100	65	117	130	5	173	30	150	SMB
SMTPA180	50	100	65	162	180	5	240	25	150	SMB
SMTPA200	50	100	65	180	200	5	267	25	150	SMB
SMTPA220	50	100	65	198	220	5	293	25	150	SMB

SMTPA240	50	100	65	216	240	5	320	25	150	SMB
SMTPA270	50	100	65	243	270	5	360	25	150	SMB
SMTPA320	50	100	65	290	320	5	400	25	150	SMB
Surge suppressors for telecom terminals in axial (50 A)										
TPA62	50	100	65	56	62	5	82	40	150	DO-15
TPA100	50	100	65	90	100	5	133	40	150	DO-15
TPA120	50	100	65	108	120	5	160	35	150	DO-15
TPA130	50	100	65	117	130	5	173	30	150	DO-15
TPA180	50	100	65	162	180	5	240	30	150	DO-15
TPA200	50	100	65	180	200	5	267	25	150	DO-15
TPA220	50	100	65	198	220	5	293	25	150	DO-15
TPA240	50	100	65	216	240	5	320	25	150	DO-15
TPA270	50	100	65	243	270	5	360	25	150	DO-15
Surge suppressors for telecom dataline in SMB (75 A)										
SMP75-8	75	250	120	6	8	5	15	75	50	SMB
Surge suppressors for telecom terminals in SMB (80 A)										
SMP80MC-120	80	250	120	108	120	5	155	25	150	SMB
SMP80MC-140	80	250	120	126	140	5	180	25	150	SMB
SMP80MC-160	80	250	120	144	160	5	205	25	150	SMB
SMP80MC-200	80	250	120	180	200	5	255	25	150	SMB
SMP80MC-230	80	250	120	207	230	5	295	25	150	SMB
SMP80MC-270	80	250	120	243	270	5	345	25	150	SMB
SMP80MC-320	80	250	120	290	320	5	400	25	150	SMB
Surge suppressors for telecom equipment in SMB (100 A)										
SMP100MC-140	100	500	150	126	140	5	180	60	150	SMB
SMP100MC-160	100	500	150	144	160	5	205	50	150	SMB
SMP100MC-200	100	500	150	180	200	5	255	45	150	SMB
SMP100MC-230	100	500	150	207	230	5	295	40	150	SMB
SMP100MC-270	100	500	150	243	270	5	345	40	150	SMB
SMP100MC-320	100	500	150	290	320	5	400	35	150	SMB
SMP100MC-360	100	500	150	325	360	5	460	35	150	SMB
SMP100MC-400	100	500	150	360	400	5	540	30	150	SMB

Lightning surge protection: ITU-T Kseries/Telcordia GR-1089

Crowbar diodes (cont'd)

Part number	I_{PP} 10/1000 μ s	I_{PP} 2/10 μ s	I_{PP} 5/310 μ s	V_{RM}	V_{BR} @ I_R		V_{BO} max	C typ @ $V_R = 2$ V	I_H min	Package
	GR-1089	GR-1089	ITU-T K20/21	(V)	(V)	(μ A)	(V)	(pF)	(mA)	
Surge suppressors for telecom equipment in SMB (100 A)										
SMP100LC-8	100	500	150	6	8	5	25	75	50 (typ)	SMB
SMP100LC-25	100	500	150	22	25	5	40	65	150	SMB
SMP100LC-35	100	500	150	32	35	5	55	55	150	SMB
SMP100LC-65	100	500	150	55	65	5	85	90	150	SMB
SMP100LC-90	100	500	150	81	90	5	125	80	150	SMB
SMP100LC-120	100	500	150	108	120	5	160	75	150	SMB
SMP100LC-140	100	500	150	126	140	5	190	65	150	SMB
SMP100LC-160	100	500	150	144	160	5	205	65	150	SMB
SMP100LC-200	100	500	150	180	200	5	255	60	150	SMB
SMP100LC-230	100	500	150	207	230	5	295	60	150	SMB
SMP100LC-270	100	500	150	243	270	5	345	60	150	SMB
SMP100LC-320	100	500	150	290	320	5	400	50	150	SMB
SMP100LC-360	100	500	150	325	360	5	460	50	150	SMB
SMP100LC-400	100	500	150	360	400	5	540	45	150	SMB

Telecommunication protection: ITU-T K series/Telcordia GR-1089

Crowbar ICs

Part number	Number of lines	I _{pp} 10/1000 μs GR-1089 (A)	I _{pp} 5/310 μs ITU-T K20/21 (A)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _R min @ I _R (V) (μA)		V _{BO} max (V)	C typ @ V _R = 2 V (pF)	I _H min (mA)	Package
Fixed voltage protection for telecom relay											
THBT15011DRL	2	30	37.5	135	5	150	50	210	80	150	SO-8
THBT20011D	2	30	37.5	180	5	200	50	290	80	150	SO-8
TLP200G-1	2	100	150	180	5	200	50	290	110	150	I ² PAK

Part number	Number of lines	I_{PP} 10/1000 μ s GR-1089 (A)	I_{PP} 2/10 μ s GR-1089 (A)	I_{PP} 5/310 μ s ITU-T K20/21 (A)	V_{MGL} max (V)	I_{RM} max @ V_{RM} (μ A)	V_{FP} max 10/700 μ s (V)	V_{DGL} max 10/700 μ s (V)	I_H min (mA)	Gate decoupling capacity min (nF)	Package
Programmable voltage protection for SLIC											
LCDP1521RL	4	2 x 15	2 x 70	2 x 25	150	5	5	5	150	100	SO-8
LCDP1521SRL	4	2 x 15	2 x 100	2 x 40	175	5	8	5	150	100	SO-8
LCP1531RL	2	-	-	37.5	150	5	5	7	150	100	SO-8
LCP1521SRL	2	30	150	40	150	5	5	7	150	100	SO-8
LCP02-150B1RL	2	30	100	45	-120/+120	5	NA	8	150	100	SO-8 wide
LCP12-150B1RL (*)	2	tbd	tbd	75	-120/+120	5	NA	8	150	100	SO-8 wide

Part number	Number of lines	I_{PP} 10/1000 μ s GR-1089 (A)	I_{PP} 2/10 μ s GR-1089 (A)	I_{PP} 5/310 μ s ITU-T K20/21 (A)	V_{LG} (V)	I_{LGL} max @ V_{GL} (μ A)	V_{SWON} max @ I_{SWOFF} (V) (mA)	Package
Programmable current and voltage protection for line card								
CLP30-200B1RL	2	30	100	40	200	10	290 150	SO-8

Part number	Number of lines	I _{PP} 10/1000 μs GR-1089 (1) (A)	I _{PP} 2/10 μs GR-1089 (1) (A)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA)	V _{BR} min @ I _{BR} (V) (mA)		V _{BO} max (V)	C typ @ V _R = 2 V (pF)	ΔC typ (pF)	Package
Secondary protection for DSL lines											
DSL01-008SC5	2	100	500	8	0.5	9.5	1	20	12	3.5	SOT23-5L
DSL01-010SC5	2	100	500	10.5	0.5	14	1	30	10	3.5	SOT23-5L
DSL01-016SC5	2	100	500	16	0.5	18	1	40	8.5	3.5	SOT23-5L
DSL01-024SC5	2	100	500	24	0.5	28	1	50	7	3.5	SOT23-5L
DSL02-010SC5 (*)	2	100	500	10	0.5	10.5	1	-	3	1.5	SOT23-5L
DSL02-016SC5 (*)	2	100	500	16	0.5	tbd	1	-	3	1.5	SOT23-5L

Notes:

(*) : Products under development

(1) : Applicable with line transformer and capacitance

Part number	Number of lines	I _{PP} 10/1000 μs GR-1089 (A)	I _{PP} 2/10 μs GR-1089 (A)	I _{PP} 5/310 μs ITU-T K20/21 (A)	V _{RM} (V)	V _R min @ I _R (V) (mA)		V _{BO} max @ I _{BO} (V) (mA)		I _H min (mA)	Package
Protection for ISDN S and U interfaces											
TPI8011N	2	30	90	40	70	80	1	120	800	150	S0-8
TPI12011N	2	30	90	40	105	120	1	180	800	150	S0-8

Part number	Number of lines	I _{pp} 8/20 μs IEC 61000-4-5 (A)	I _{pp} 2/10 μs GR-1089 (A)	I _{pp} 5/310 μs ITU-T K20/21 (A)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA) (V)	V _{BO} max (V)	C typ (pF)	I _H min (mA)	Package
Protection for T1/E1 interfaces										
TPN3021	2	100	200	50	28	4 28	38	16	30	S0-8

Part number	Number of lines	I _{pp} 8/20 μs IEC 61000-4-5 (A)	I _{pp} 2/10 μs GR-1089 (A)	I _{pp} 5/310 μs ITU-T K20/21 (A)	V _{RM} (V)	I _{RM} max @ V _{RM} (μA) (V)		V _{BO} max (V)	C max (pF)	I _H min (mA)	Package
Protection for Ethernet											
ETP01-1621RL	2	48	100	37.5	16	1	16	25	13	30	S0-8
ETP01-2821RL	2	48	100	37.5	28	1	28	36	13	30	S0-8

Telecommunication protection: ITU-T K series/Telcordia GR-1089

Crowbar ICs (cont'd)

Part number	Number of lines	I _{PP} 10/1000 μs GR-1089	I _{PP} 2/10 μs GR-1089	I _{PP} 5/310 μs ITU-T K20/21	V _{RM}	I _{RM} max @ V _{RM}		V _{BO} max @ I _{BO}		I _H min	Package
		(A)	(A)	(A)	(V)	(μA)	(V)	(V)	(mA)	(mA)	
Bridge and protection all-in-one for telecom terminals											
TSI220B1	2	30	75	40	220	5	220	330	400	150	S0-8
Overvoltage and overcurrent protection for telecom lines											
TPP25011RL	2	30	75	40	60	6	60	340	200	180	S0-8

Current limiting terminations

Part number	Number of channels	Digital input type	V_{CC}	V_I	I_{LIM} min/max	I_{OFF} / V_{OFF}	IEC 61000-4-2	V_{pp} 1.2/50 μ s	Package
			(V)	(V)	(mA)	(mA/V)	(kV)	(kV)	
CLT3-4BT6	4	1 and 3	19 to 35	-30 to +35	2.1/3.7	1.5/5	± 8	1	TSSOP14
PCLT-2AT4	2	1, 2, 3	19 to 35	-30 to +35	6.1/8.8 for type 2 2.8/4.3 for type 1	2/5	± 15	1	TSSOP20
SCLT3-8BT8	8	3	15 to 35	-30 to +35	2.1/2.6	1.5/5	± 15	1	HTSSOP38



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