SGS-THOMSON MICROELECTRONICS

SGSIF461

FAST-SWITCH HOLLOW-EMITTER NPN TRANSISTOR

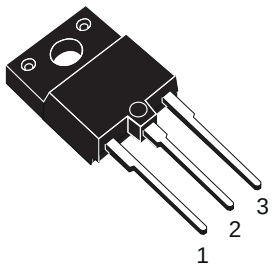
- VERY HIGH SWITCHING SPEED
- NPN TRANSISTOR
- LOW BASE-DRIVE REQUIREMENTS

APPLICATIONS:
- SWITCH MODE POWER SUPPLIES

DESCRIPTION

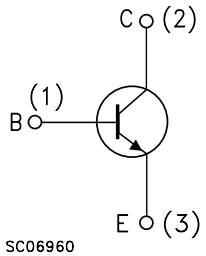
The SGSIF461 is manufactured using Multiepitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.

The SGSF series is designed for high speed switching applications such as power supplies and horizontal deflection circuits in TVs and monitors.



ISOWATT218

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	850	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	400	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	15	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	25	A
I_B	Base Current	8	A
I_{BM}	Base Peak Current (t_p < 5 ms)	15	A
P_{tot}	Total Dissipation at T_c = 25 °C	55	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

		ISOWATT218	
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case Max	2.2	°C/W

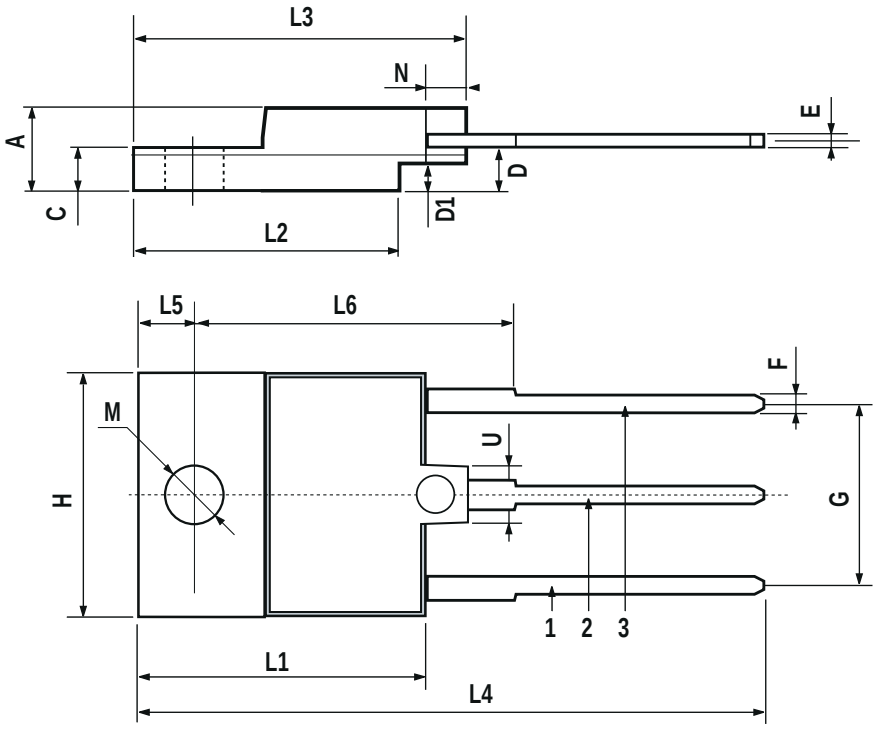
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 700 V			200	µA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{EC} = 380 V V_{EC} = 400 V			200 2	µA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{BE} = 7 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 100 mA	400			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 10 A I_B = 2 A I_C = 5.5 A I_B = 0.8 A			1.5 1.5	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 10 A I_B = 2 A I_C = 5.5 A I_B = 0.8 A			1.5 1.5	V V
t_{ON} t_s t_f	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD V_{CC} = 250 v I_C = 10 A I_{B1} = 2 A I_{B2} = -2I_{B1}		1 1.4 0.25	1.7 2.3 0.5	µs µs µs
t_{ON} t_s t_f	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD V_{CC} = 250 v I_C = 10 A I_{B1} = 2 A I_{B2} = -2I_{B1} With Antisaturation Network		1 1 0.15		µs µs µs
t_{ON} t_s t_f	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD V_{CC} = 250 V I_C = 10 A I_{B1} = 2 A V_{BE}(off) = - 5 V		1 1 0.06		µs µs µs
t_s t_f	Storage Time Fall Time	INDUCTIVE LOAD I_C = 10 A h_{FE} = 5 V_{CL} = 350 V $V_{BE(off)}$ = -5 V L = 300 µH $R_{BE(off)}$ = 1.2 Ω		1.4 0.1	2.8 0.2	µs µs
t_s t_f	Storage Time Fall Time	INDUCTIVE LOAD I_C = 10 A h_{FE} = 5 V_{CL} = 350 V $V_{BE(off)}$ = -5 V L = 300 µH $R_{BE(off)}$ = 1.2 Ω T_c = 100 °C			4 0.3	µs µs

∗ Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

ISOWATT218 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
C	3.3		3.8	0.130		0.149
D	2.9		3.1	0.114		0.122
D1	1.88		2.08	0.074		0.081
E	0.75		1	0.029		0.039
F	1.05		1.25	0.041		0.049
G	10.8		11.2	0.425		0.441
H	15.8		16.2	0.622		0.637
L1	20.8		21.2	0.818		0.834
L2	19.1		19.9	0.752		0.783
L3	22.8		23.6	0.897		0.929
L4	40.5		42.5	1.594		1.673
L5	4.85		5.25	0.190		0.206
L6	20.25		20.75	0.797		0.817
M	3.5		3.7	0.137		0.145
N	2.1		2.3	0.082		0.090
U		4.6			0.181	



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