

**2SK1431**

Ultrahigh-Speed Switching Applications

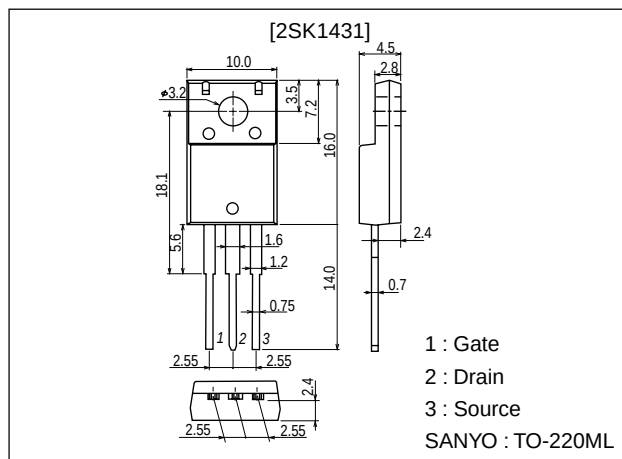
Features

- Low ON-state resistance.
- Ultrahigh-speed switching.
- Converters.
- Micaless package facilitating easy mounting.

Package Dimensions

unit:mm

2063A



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		100	V
Gate-to-Source Voltage	V_{GS}		±20	V
Drain Current (DC)	I_D		15	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	60	A
Allowable Power Dissipation	P_D	$T_c = 25^\circ C$	30	W
			2.0	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1mA$, $V_{GS} = 0$	100			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V$, $V_{GS} = 0$			100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0$			±100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$, $I_D = 1mA$	1.5		2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10V$, $I_D = 12A$	8.0	14		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$I_D = 12A$, $V_{GS} = 10V$		0.075	0.10	Ω

(Note) Be careful in handling the 2SK1431 because it has no protection diode between gate and source.

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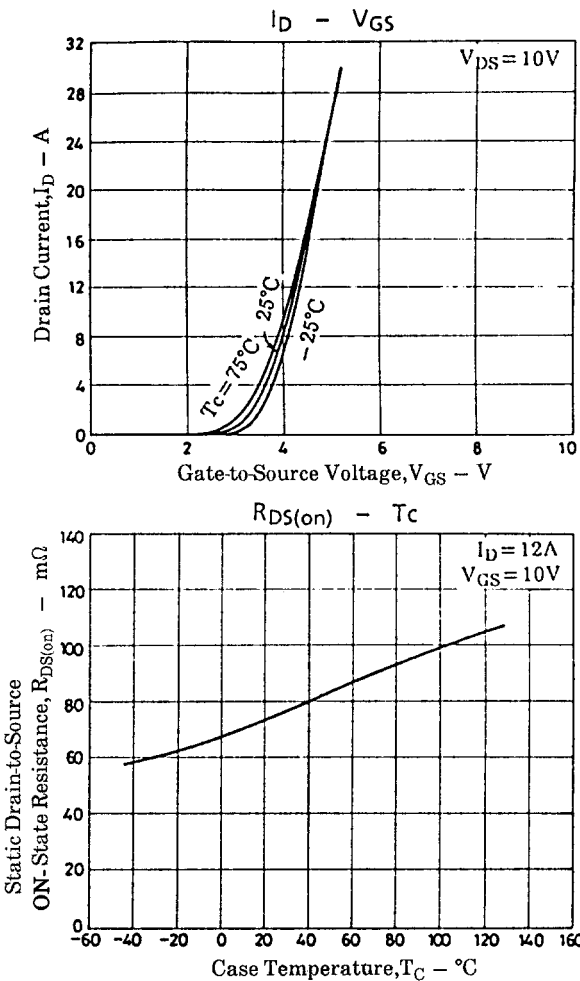
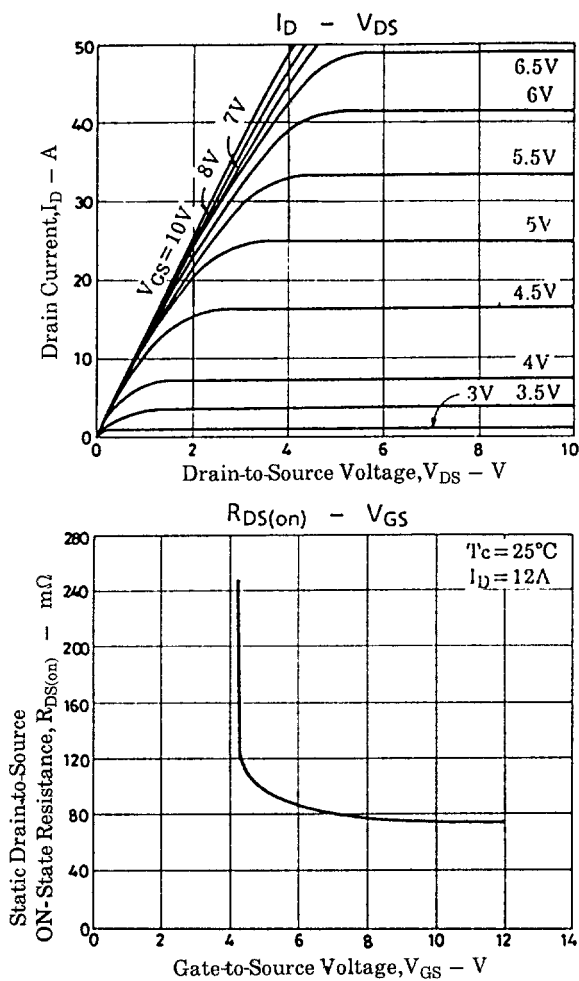
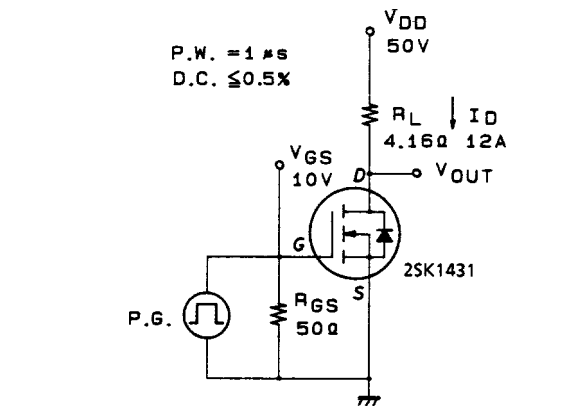
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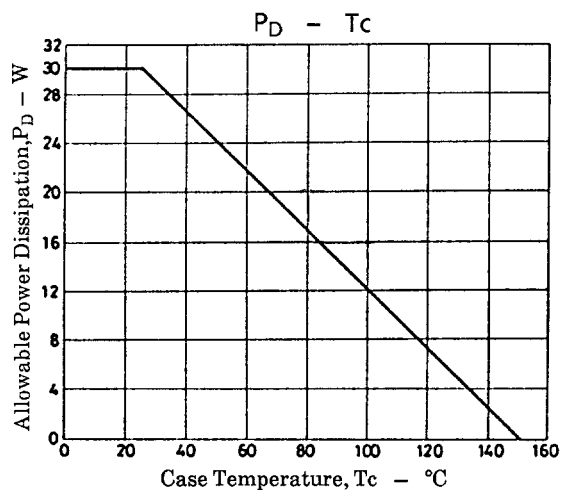
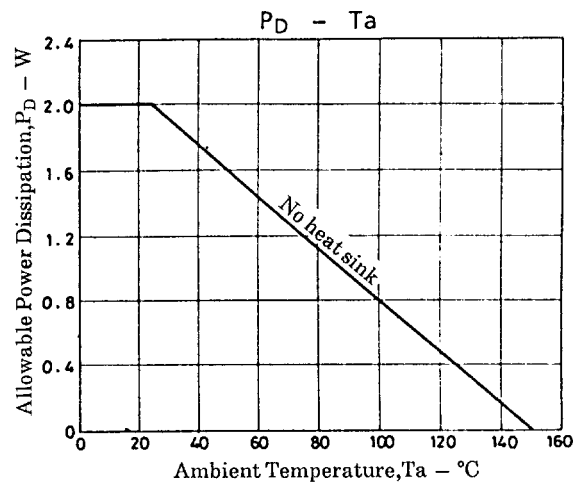
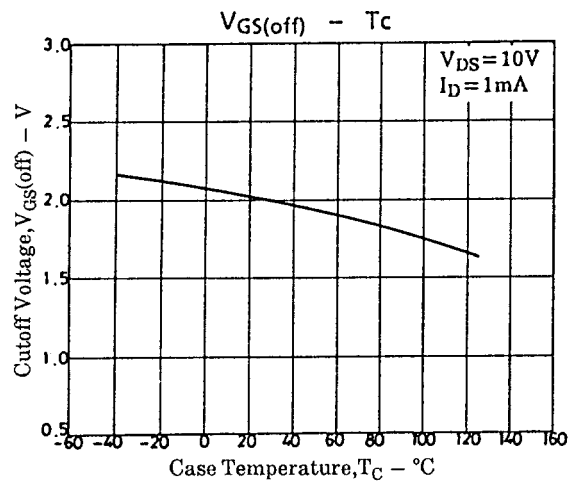
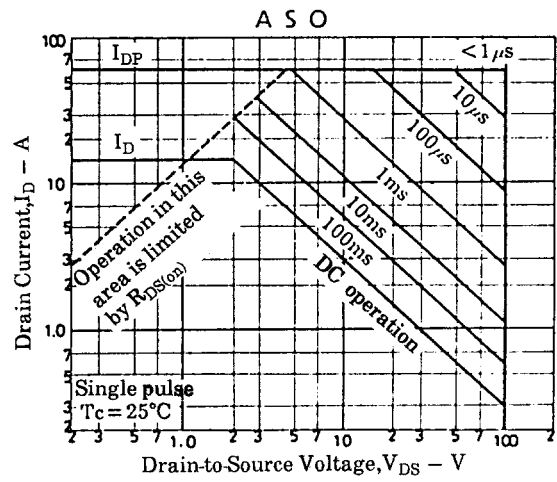
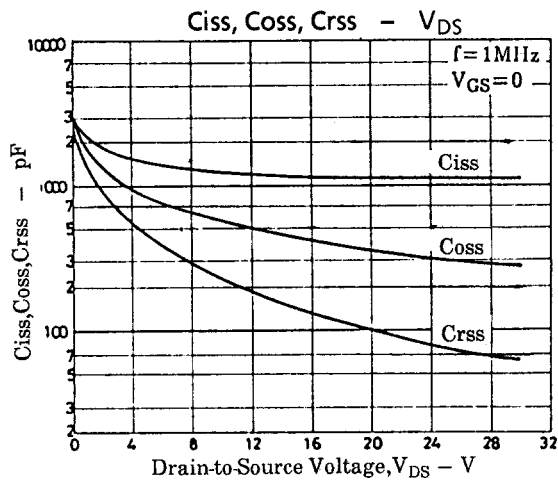
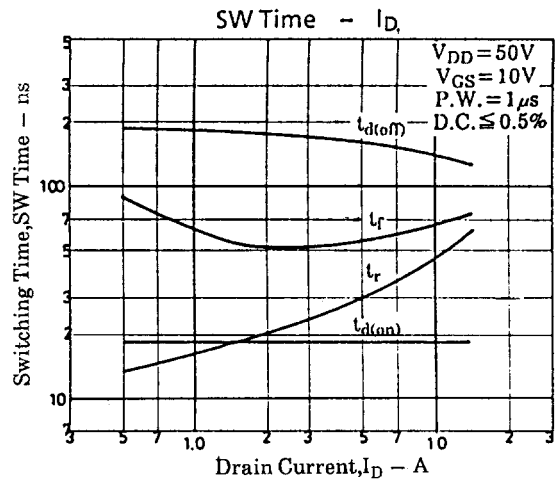
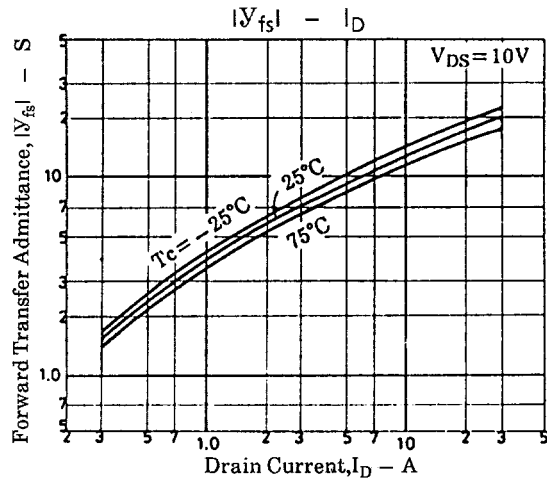
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V, f=1MHz$		1200		pF
Output Capacitance	Coss	$V_{DS}=20V, f=1MHz$		350		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V, f=1MHz$		100		pF
Turn-ON Delay Time	$t_{d(on)}$	$I_D=12A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		18		ns
Rise Time	t_r	$I_D=12A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		52		ns
Turn-OFF Delay Time	$t_{d(off)}$	$I_D=12A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		140		ns
Fall Time	t_f	$I_D=12A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		70		ns
Diode Forward Voltage	V_{SD}	$I_S=15A, V_{GS}=0$			1.8	V

Switching Time Test Circuit





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