

**2SK1433**

Ultrahigh-Speed Switching Applications

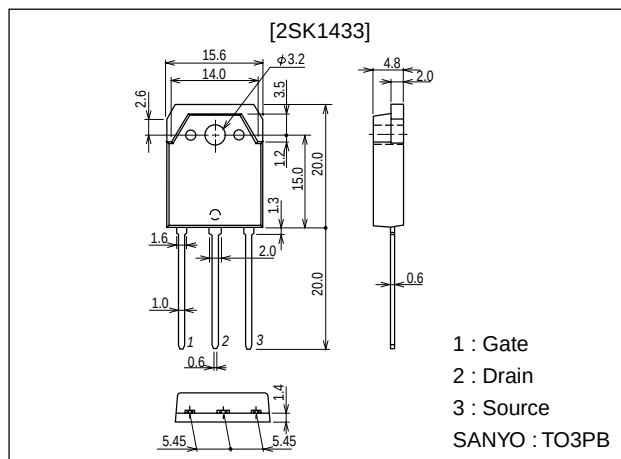
Features

- Low ON-state resistance.
- Ultrahigh-speed switching.
- Converters.

Package Dimensions

unit:mm

2056A



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		100	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		30	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	120	A
Allowable Power Dissipation	P_D	$T_c = 25^\circ\text{C}$	100	W
			2.5	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to $+150$	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}$, $V_{GS} = 0$	100			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{V}$, $V_{GS} = 0$			100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	1.5		2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 20\text{A}$	13	22		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$I_D = 20\text{A}$, $V_{GS} = 10\text{V}$		0.040	0.055	Ω

(Note) Be careful in handling the 2SK1433 because it has no protection diode between gate and source.

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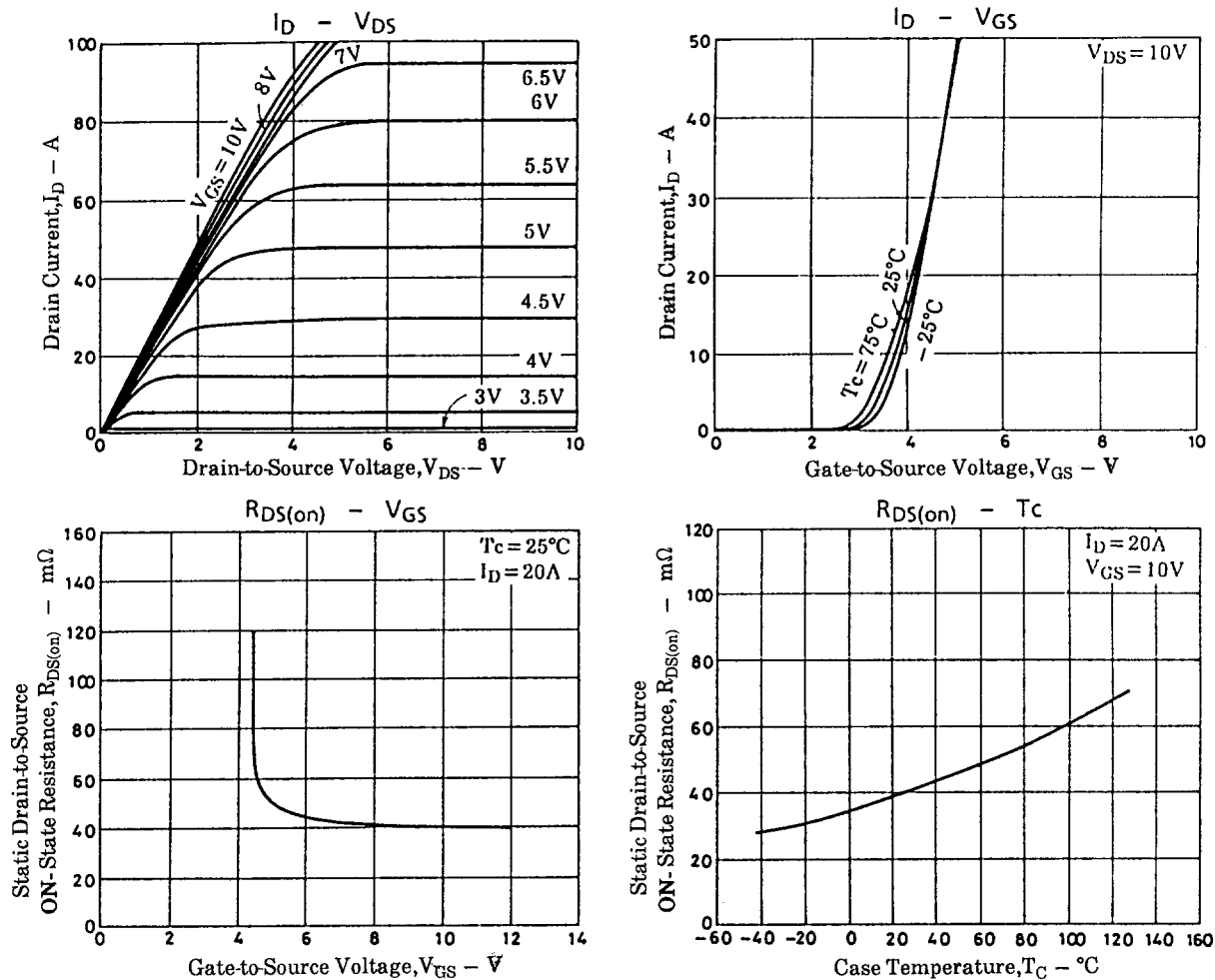
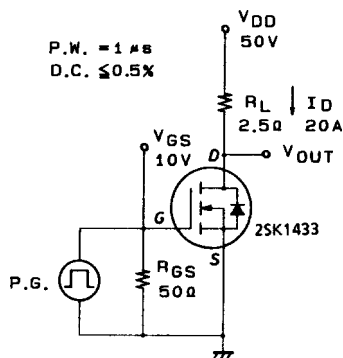
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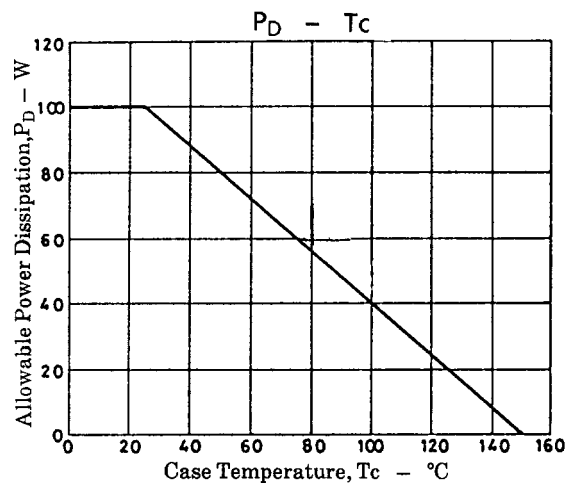
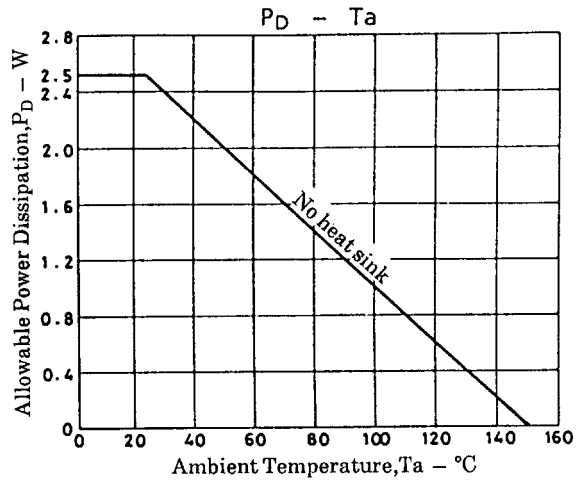
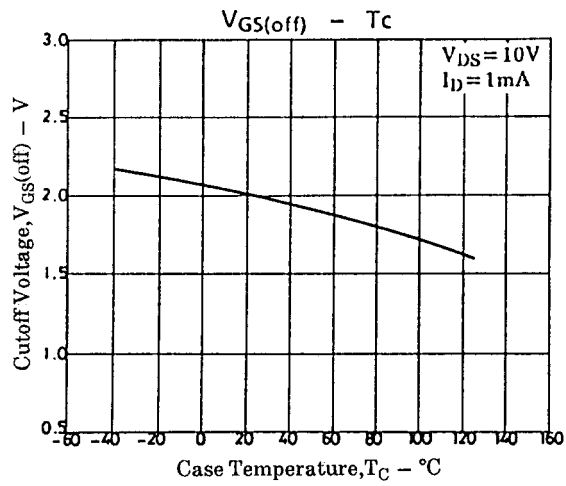
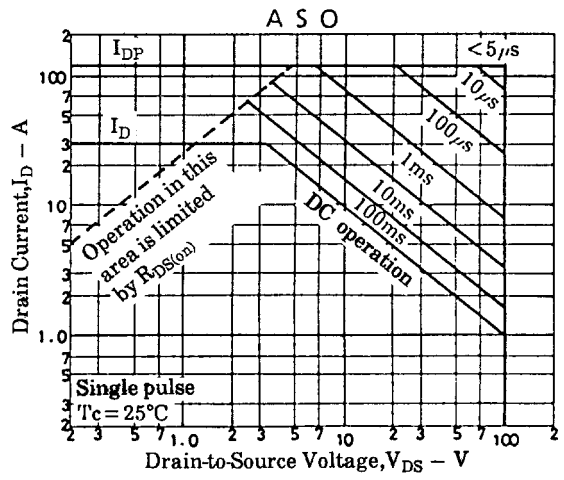
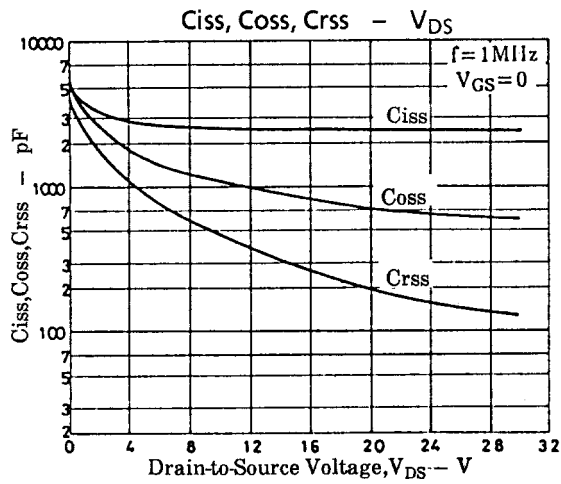
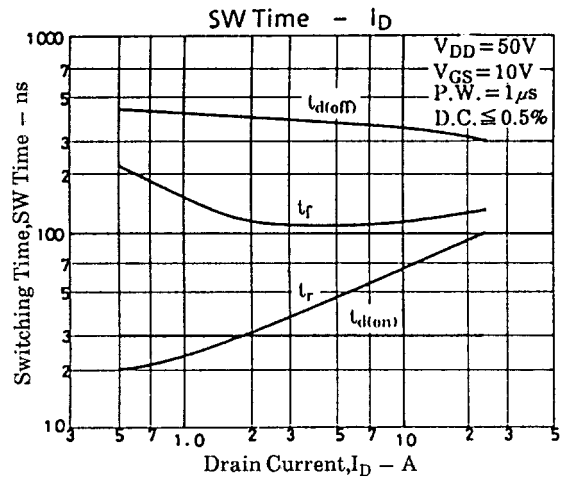
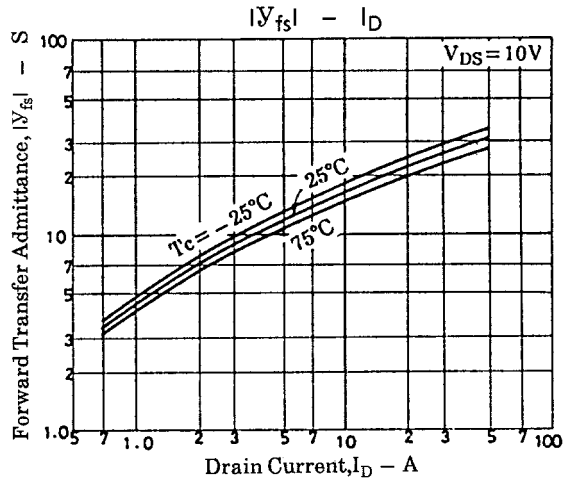
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V, f=1MHz$		2400		pF
Output Capacitance	Coss	$V_{DS}=20V, f=1MHz$		700		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V, f=1MHz$		200		pF
Turn-ON Delay Time	$t_{d(on)}$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		30		ns
Rise Time	t_r	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		90		ns
Turn-OFF Delay Time	$t_{d(off)}$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		320		ns
Fall Time	t_f	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$		130		ns
Diode Forward Voltage	V_{SD}	$I_S=30A, V_{GS}=0$			1.8	V

Switching Time Test Circuit





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