



Ultrahigh-Speed Switching Applications

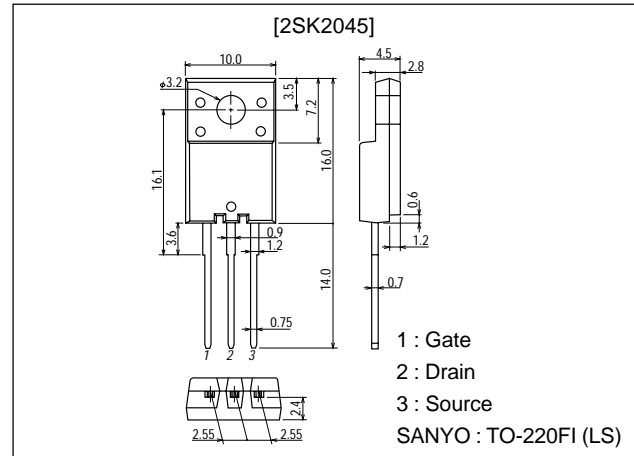
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- High-speed diode built in (trr=140ns).
- Micaless package facilitating easy mounting.

Package Dimensions

unit:mm

2078B



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		600	V
Gate-to-Source Voltage	V_{GSS}		± 30	V
Drain Current (DC)	I_D		5.5	A
Drain Current (pulse)	I_{DP}		22	A
Allowable Power Dissipation	P_D		2.0	W
		$T_c=25^\circ\text{C}$	35	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}$, $V_{GS}=0$	600			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=480\text{V}$, $V_{GS}=0$			1.0	mA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30\text{V}$, $V_{DS}=0$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	2.0		3.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$, $I_D=3\text{A}$	2.3	4.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=3\text{A}$, $V_{GS}=10\text{V}$		1.1	1.5	Ω

(Note) Be careful in handling the 2SK2045 because it has no protection diode between gate and source.

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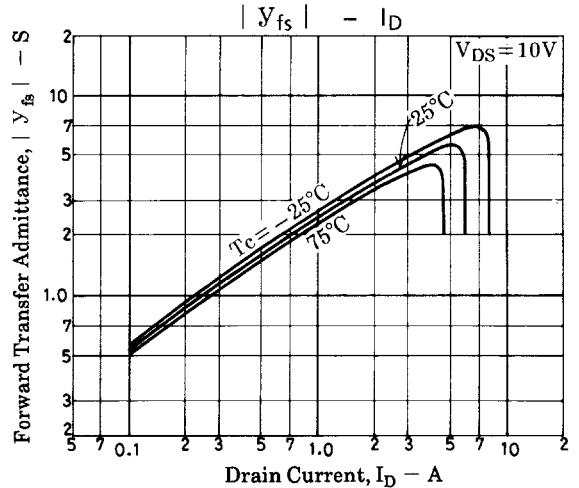
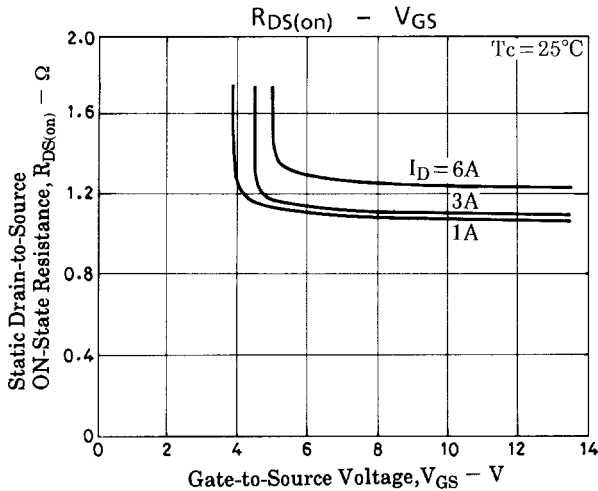
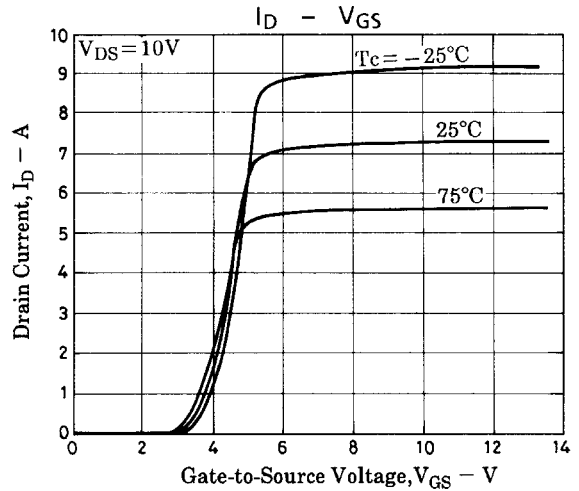
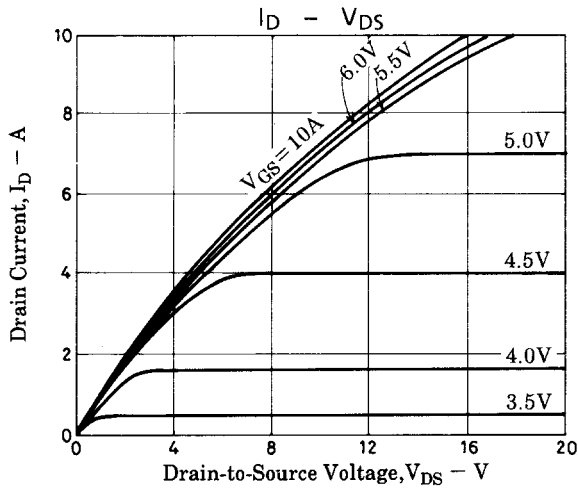
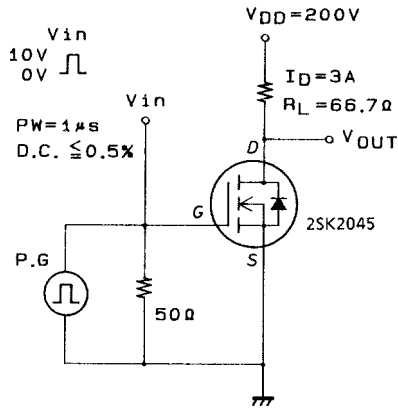
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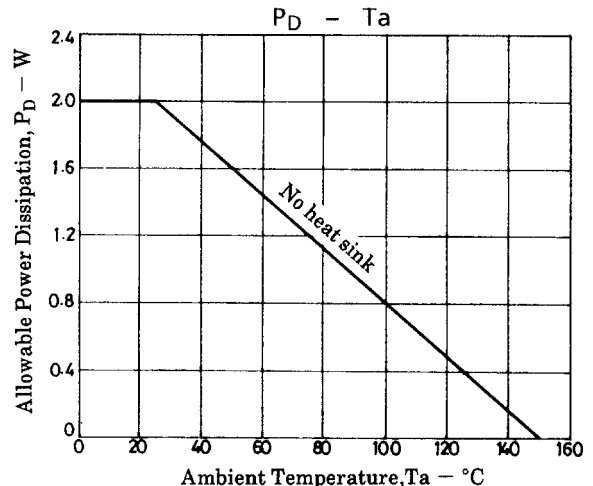
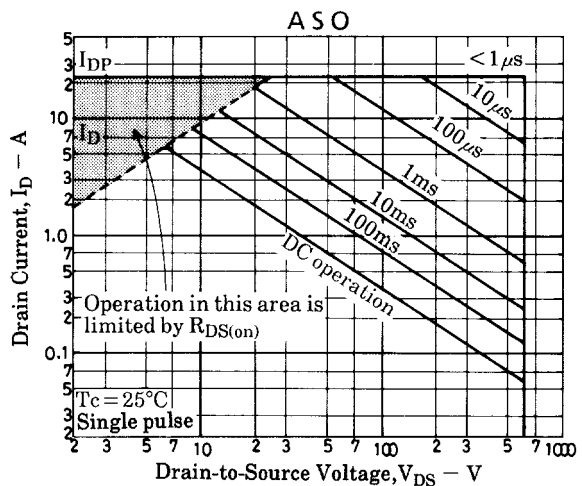
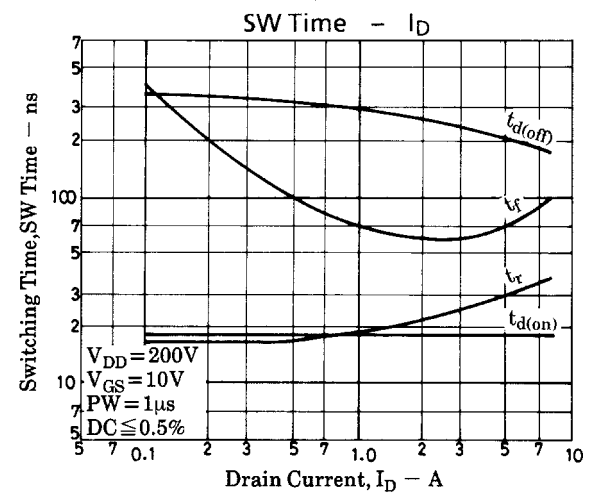
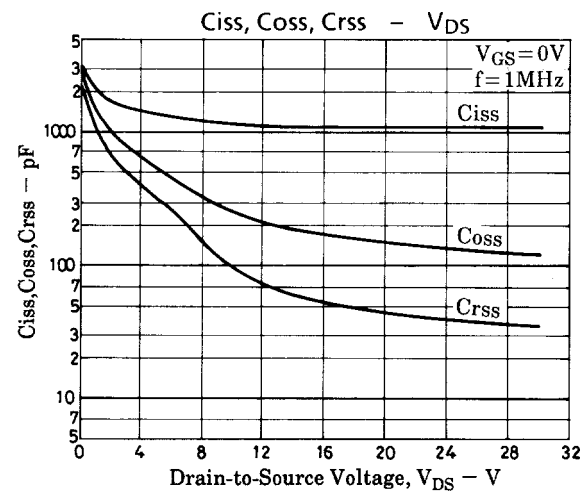
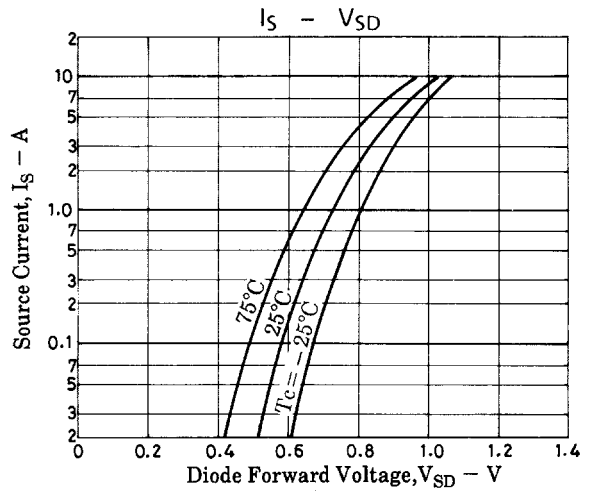
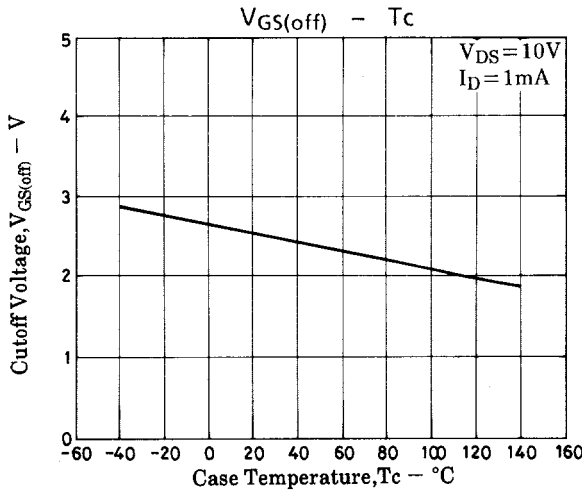
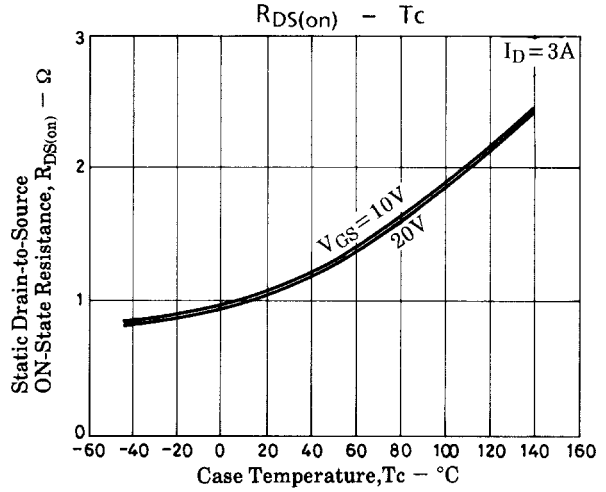
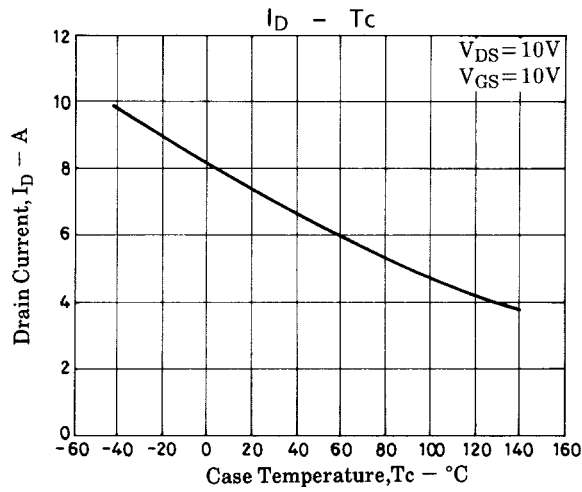
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		1100		pF
Output Capacitance	C_{oss}	$V_{DS}=20V, f=1MHz$		150		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=20V, f=1MHz$		45		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		18		ns
Rise Time	t_r	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		240		ns
Fall Time	t_f	See specified Test Circuit.		60		ns
Diode Forward Voltage	V_{SD}	$I_S=5.5A, V_{GS}=0$			1.5	V
Diode Reverse Recovery Time	t_{rr}	$I_S=5.5A, di/dt=100A/\mu s$		140		ns

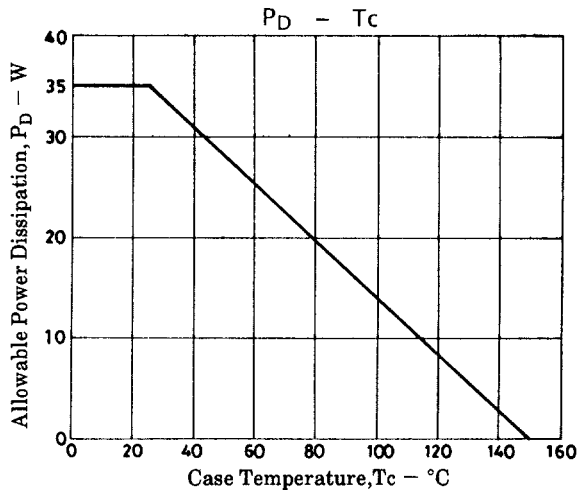
Switching Time Test Circuit



2SK2045



2SK2045



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