



# **Ultrahigh-Speed Switching Applications**

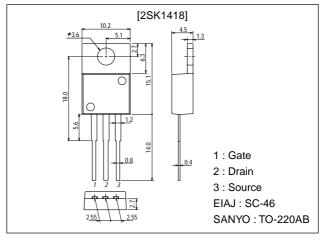
### **Features**

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

# **Package Dimensions**

unit:mm

2052C



# **Specifications**

## Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		60	V
Gate-to-Source Voltage	VGSS		±20	V
Drain Current (DC)	ID		40	Α
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	160	Α
Allowable Power Dissipation	PD	Tc=25°C	70	W
			1.75	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	O IIII
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0	60			V
Zero-Gate Voltage Drain Current	IDSS	V <sub>DS</sub> =60V, V <sub>GS</sub> =0			100	μA
Gate-to-Source Leakage Current	IGSS	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0			±100	nA
Cutoff Voltage	VGS(off)	$V_{DS}$ =10V, $I_D$ =1mA	1.5		2.5	V
Forward Transfer Admittance	yfs	V <sub>DS</sub> =10V, I <sub>D</sub> =25A	15	25		S
Static Drain-to-Source ON-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =25A, V <sub>GS</sub> =10V		0.020	0.026	Ω

(Note) Be careful in handling the 2SK1418 because it has no protection diode between gate and source.

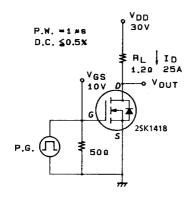
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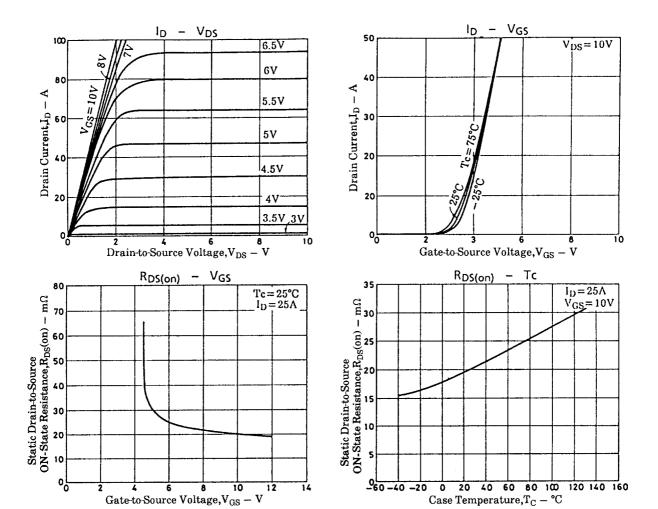
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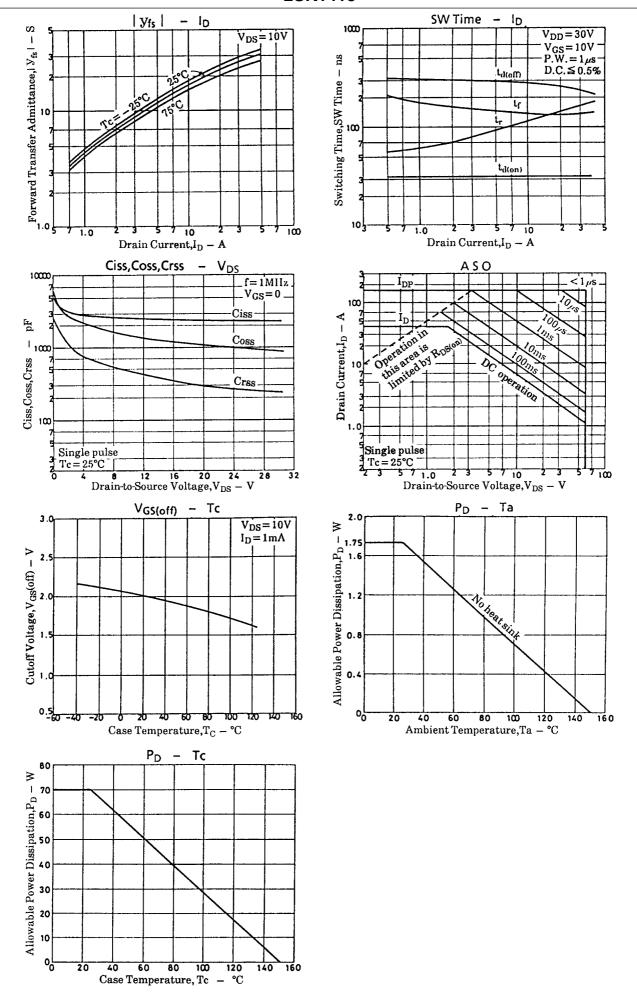
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	0,111
Input Capacitance	Ciss	V <sub>DS</sub> =20V, f=1MHz		2400		pF
Output Capacitance	Coss	V <sub>DS</sub> =20V, f=1MHz		1100		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =20V, f=1MHz		300		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	$I_{D}$ =25A, $V_{GS}$ =10V, $V_{DD}$ =30V, $R_{GS}$ =50 $\Omega$		31		ns
Rise Time	t <sub>r</sub>	$I_D$ =25A, $V_{GS}$ =10V, $V_{DD}$ =30V, $R_{GS}$ =50 $\Omega$		159		ns
Turn-OFF Delay Time	td(off)	$I_D$ =25A, $V_{GS}$ =10V, $V_{DD}$ =30V, $R_{GS}$ =50 $\Omega$		240		ns
Fall Time	t <sub>f</sub>	$I_D$ =25A, $V_{GS}$ =10V, $V_{DD}$ =30V, $R_{GS}$ =50 $\Omega$		140		ns
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =40A, V <sub>GS</sub> =0			1.8	V

## **Switching Time Test Circuit**







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