

**2SK1416**

## Ultrahigh-Speed Switching Applications

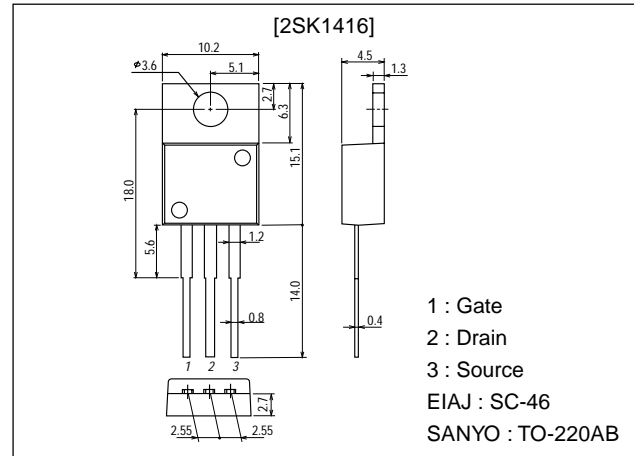
### Features

- 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	$V_{DS}$		60	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	$P_D$	$T_c = 25^\circ C$	40	W
			1.75	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	$V_{(BR)DSS}$	$I_D = 1mA$ , $V_{GS} = 0$	60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60V$ , $V_{GS} = 0$			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} $	$V_{DS} = 10V$ , $I_D = 10A$	6.0	10		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$I_D = 10A$ , $V_{GS} = 10V$		0.060	0.080	Ω

(Note) Be careful in handling the 2SK1416 because it has no protection diode between gate and source.

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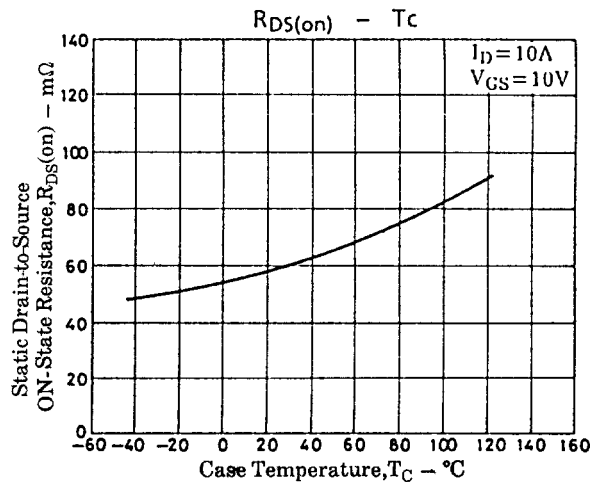
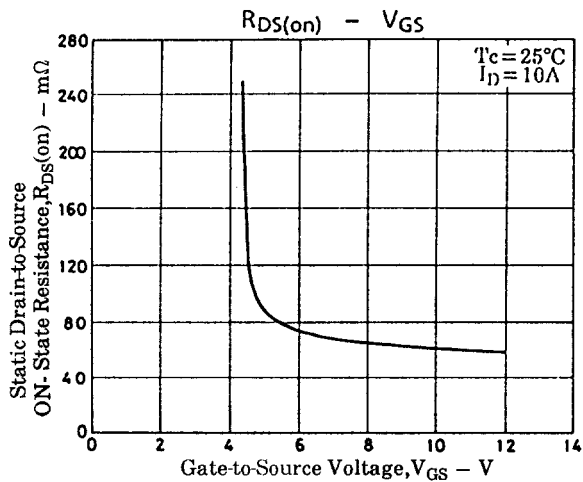
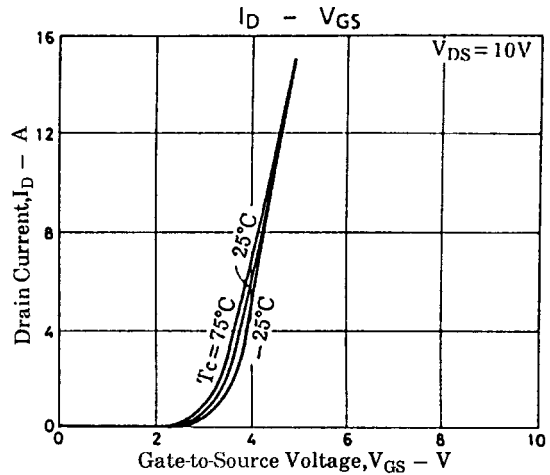
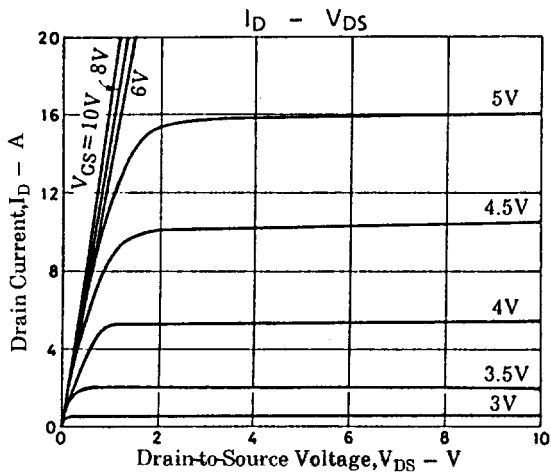
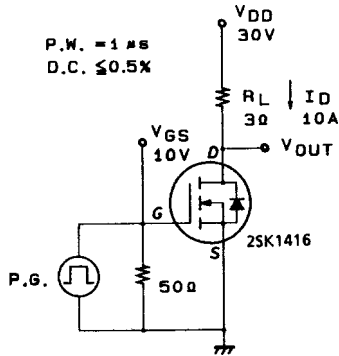
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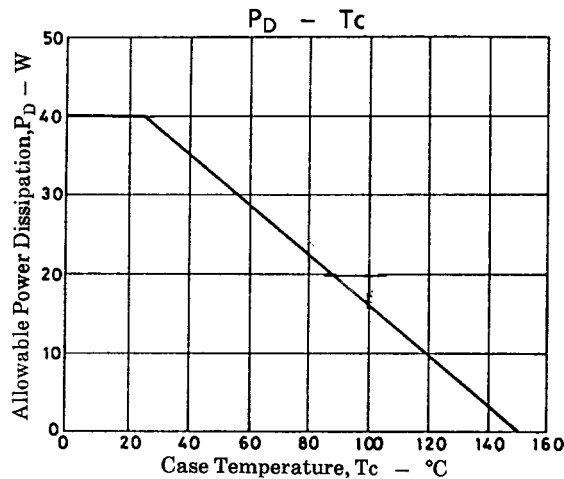
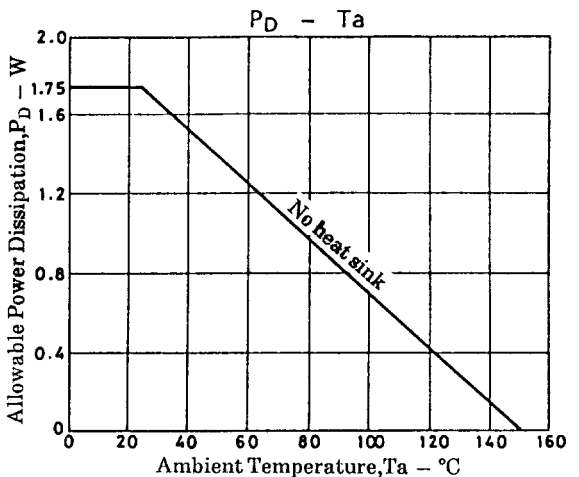
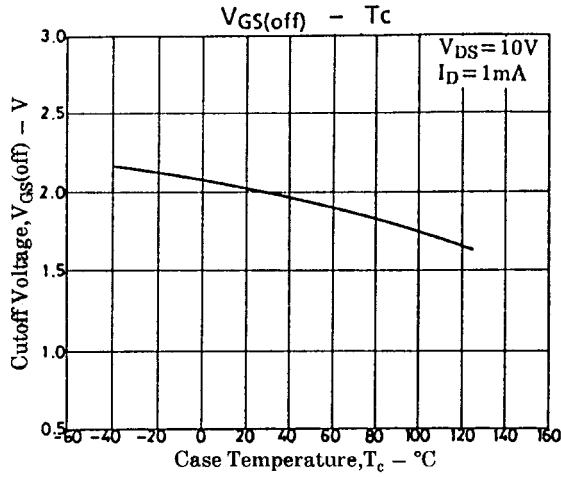
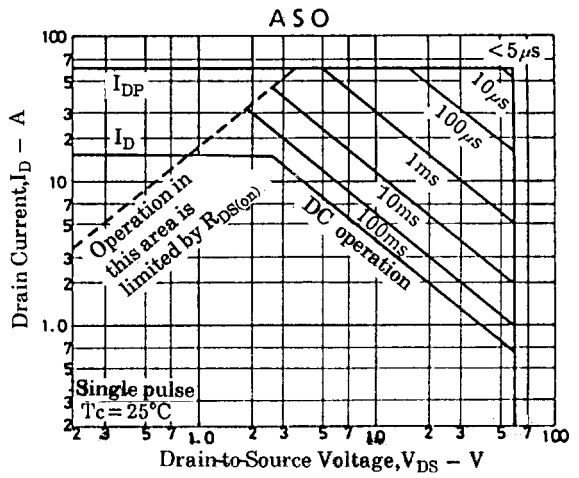
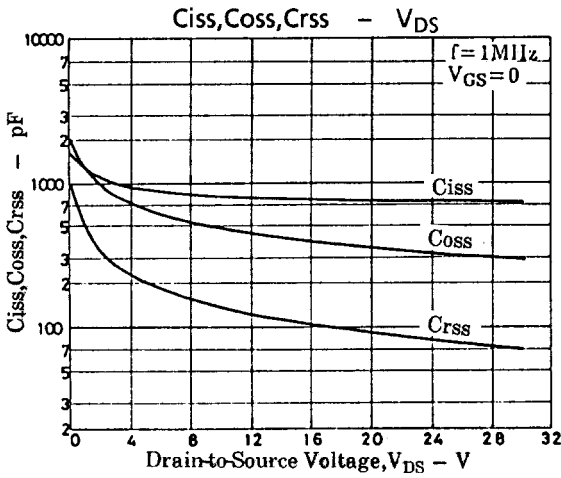
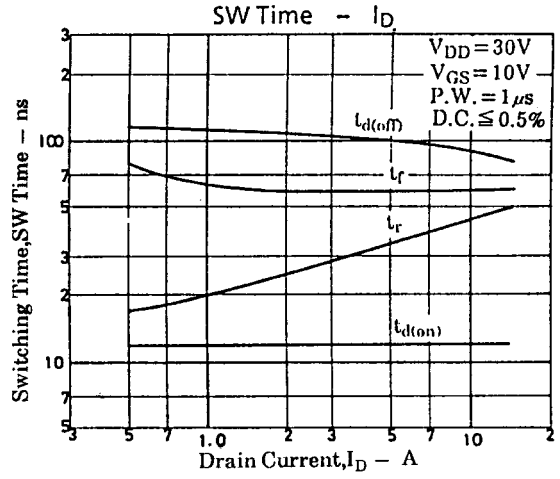
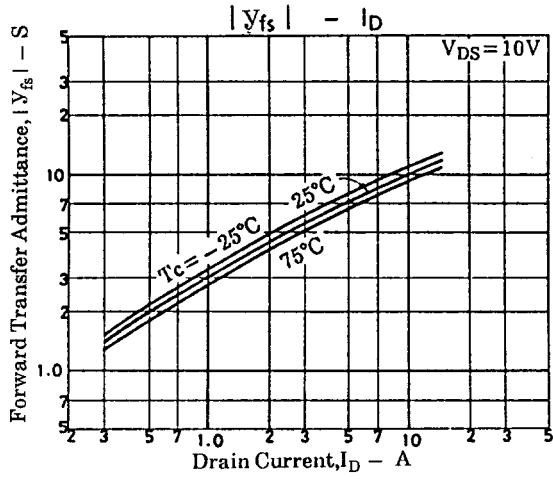
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		750		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		350		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		90		pF
Turn-ON Delay Time	$t_{d(on)}$	$I_D=10A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$		12		ns
Rise Time	$t_r$	$I_D=10A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$		43		ns
Turn-OFF Delay Time	$t_{d(off)}$	$I_D=10A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$		90		ns
Fall Time	$t_f$	$I_D=10A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$		60		ns
Diode Forward Voltage	$V_{SD}$	$I_S=15A, V_{GS}=0$			1.8	V

## Switching Time Test Circuit



# 2SK1416



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