

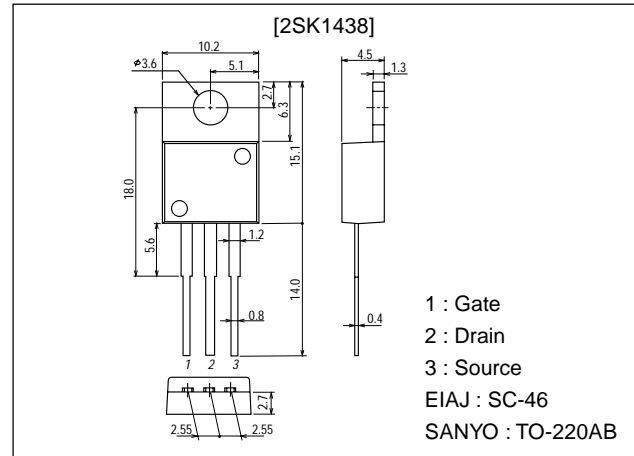
**2SK1438****Ultrahigh-Speed Switching Applications****Features**

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

**Package Dimensions**

unit:mm

2052C

**Specifications****Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		450	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 30$	V
Drain Current (DC)	$I_D$		0.3	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	1.2	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ C$	20	W
			1.75	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1mA$ , $V_{GS} = 0$	450			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 450V$ , $V_{GS} = 0$			1.0	mA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 30V$ , $V_{DS} = 0$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$ , $I_D = 1mA$	2.0		3.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10V$ , $I_D = 0.2A$	0.15	0.3		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$I_D = 0.2A$ , $V_{GS} = 10V$		9.0	12	$\Omega$

(Note) Be careful in handling the 2SK1438 because it has no protection diode between gate and source.

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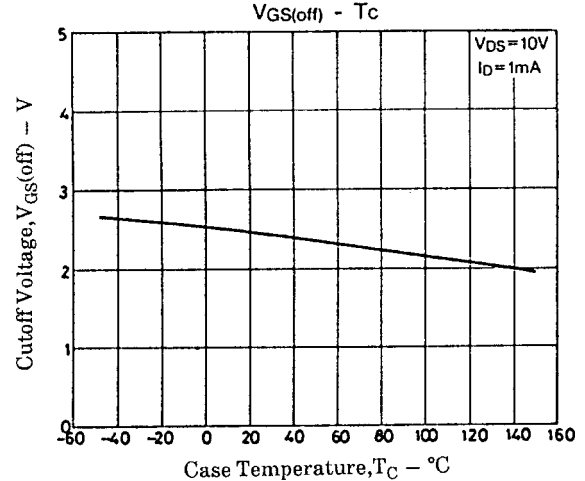
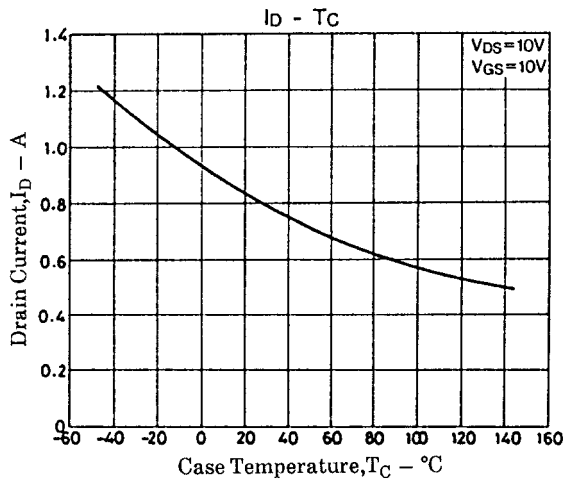
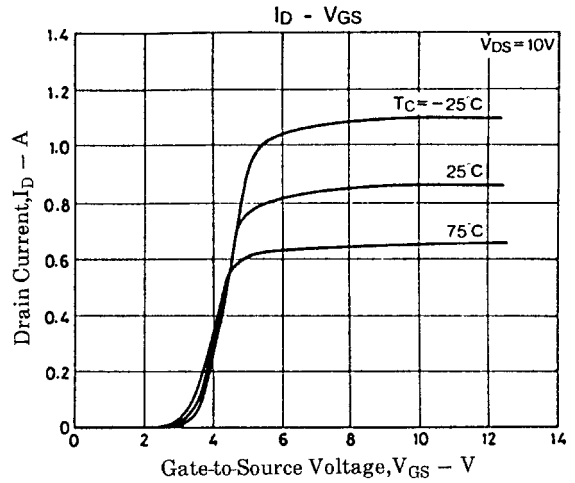
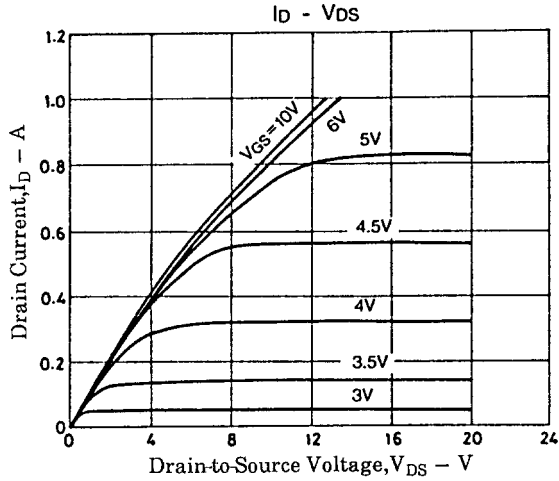
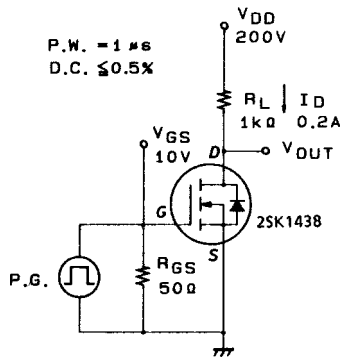
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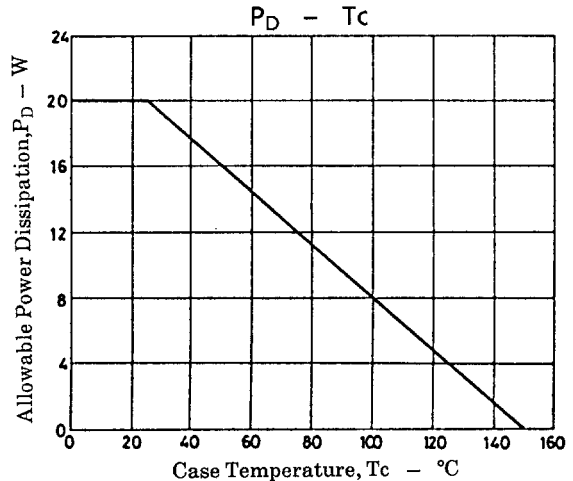
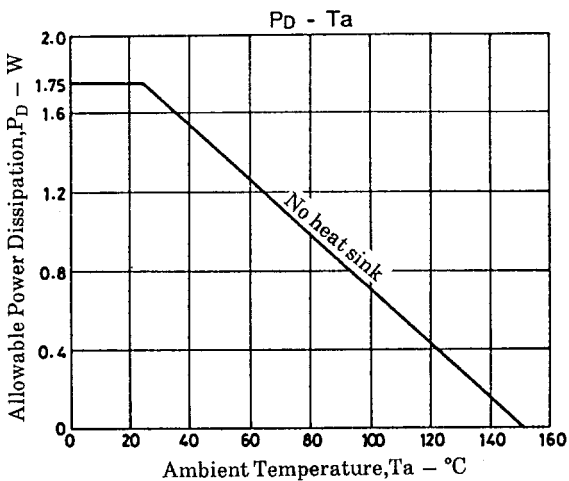
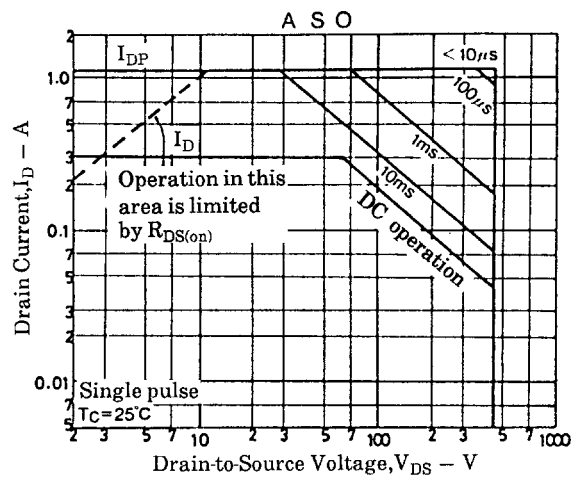
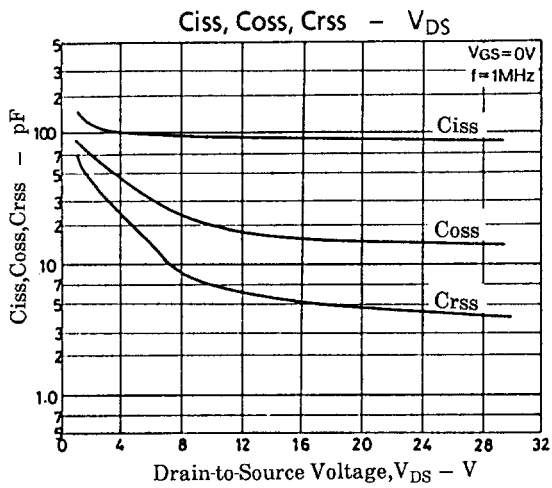
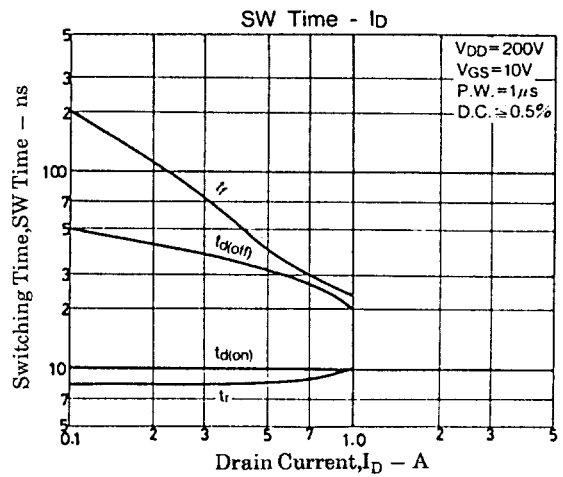
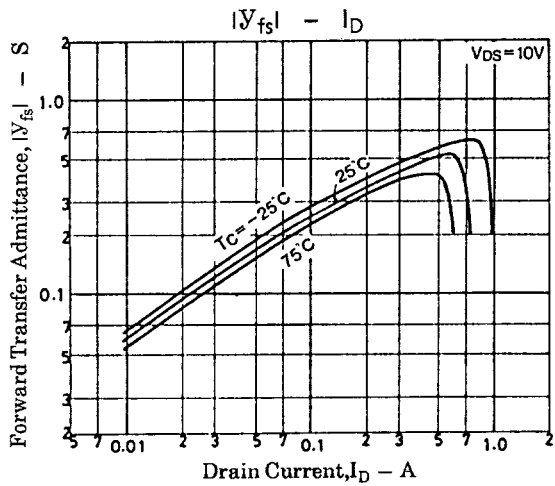
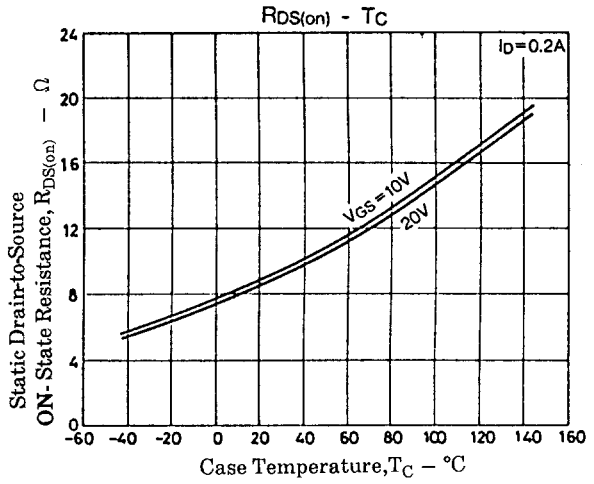
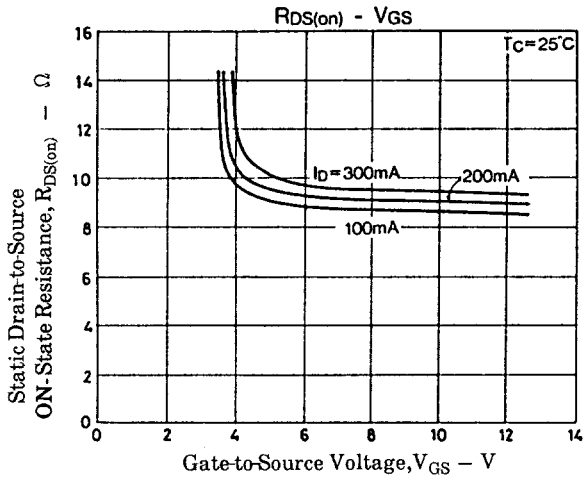
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V, f=1MHz$		90		pF
Output Capacitance	Coss	$V_{DS}=20V, f=1MHz$		15		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V, f=1MHz$		4.5		pF
Turn-ON Delay Time	$t_{d(on)}$	$I_D=0.2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$		10		ns
Rise Time	$t_r$	$I_D=0.2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$		8.0		ns
Turn-OFF Delay Time	$t_{d(off)}$	$I_D=0.2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$		40		ns
Fall Time	$t_f$	$I_D=0.2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$		110		ns
Diode Forward Voltage	$V_{SD}$	$I_S=0.3A, V_{GS}=0$			1.8	V

## Switching Time Test Circuit



# 2SK1438



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