



# 2SK1889

## Ultrahigh-Speed Switching Applications

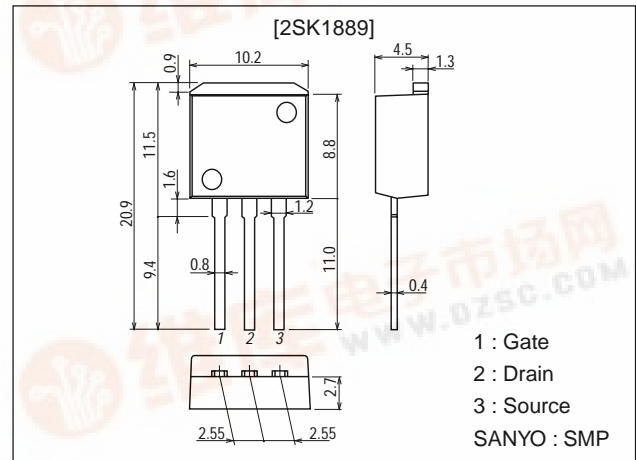
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Surface mount type device making the following possible.
  - Reduction in the number of manufacturing processes for 2SK1889-applied equipment.
  - High density surface mount applications.
  - Small size of 2SK1889-applied equipment.

### Package Dimensions

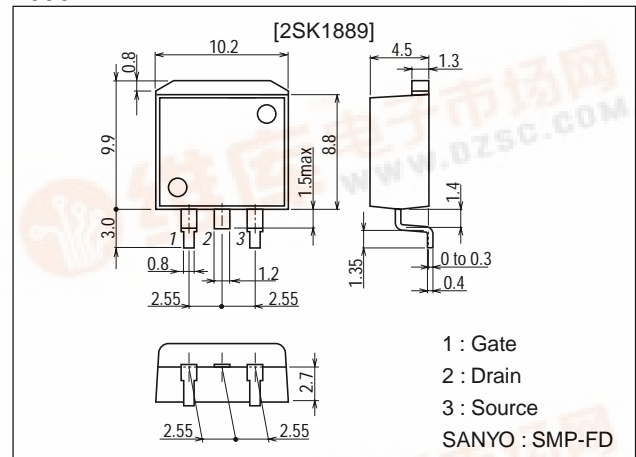
unit:mm

2093A



unit:mm

2090A



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## 2SK1889

### Specifications

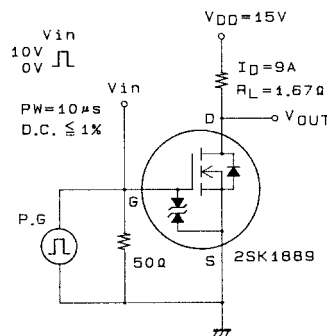
#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 15$	V
Drain Current (DC)	$I_D$		18	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	72	A
Allowable Power Dissipation	$P_D$		1.65	W
		$T_c = 25^\circ\text{C}$	50	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

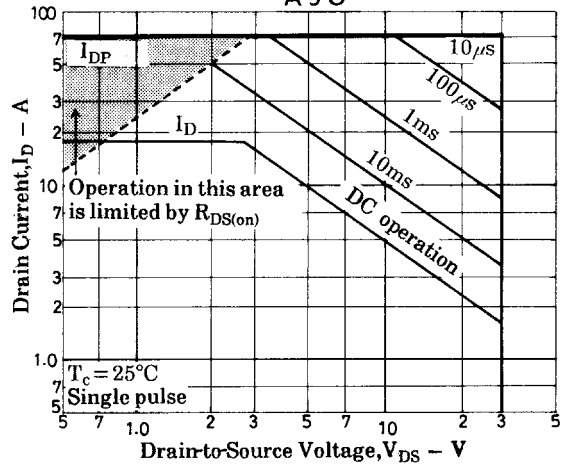
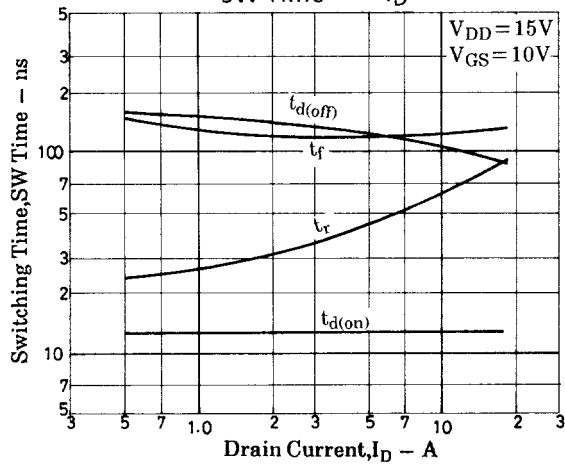
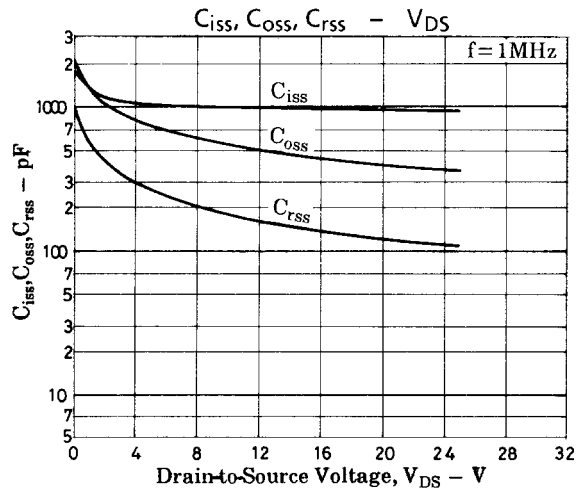
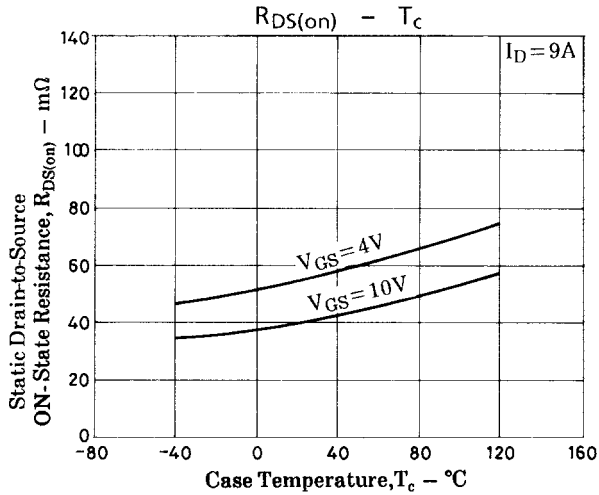
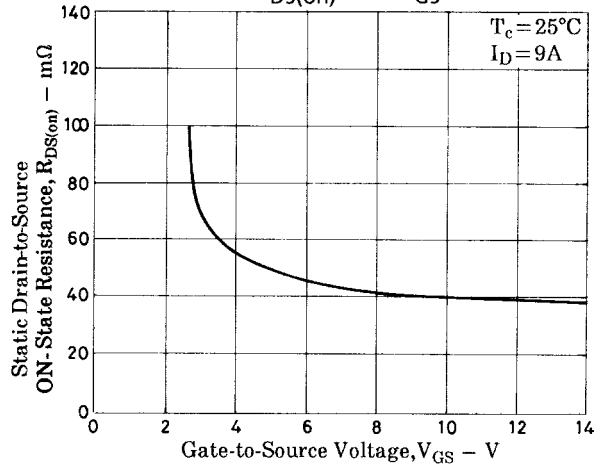
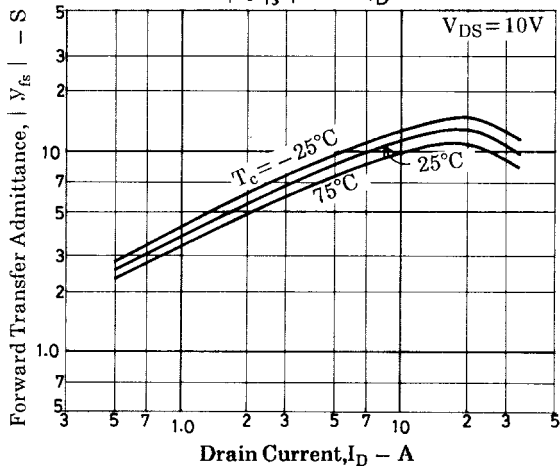
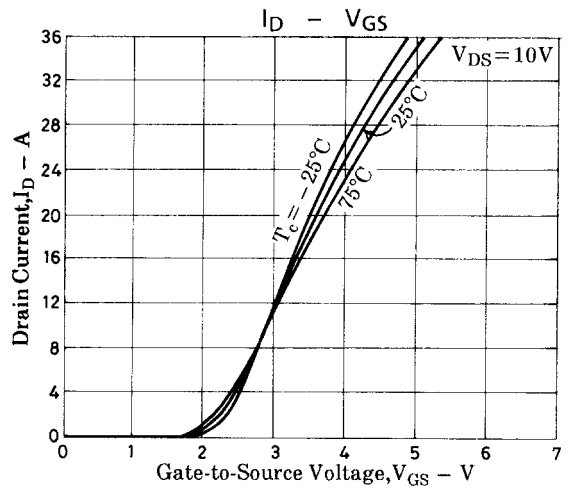
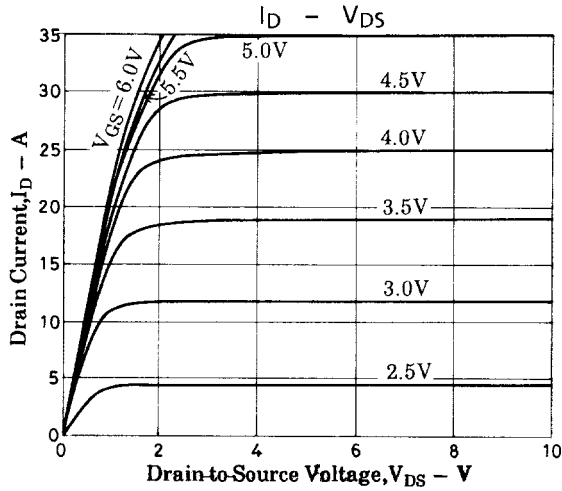
#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}$ , $V_{GS} = 0$	30			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$	$\pm 15$			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30\text{V}$ , $V_{GS} = 0$			100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 12\text{V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{V}$ , $I_D = 1\text{mA}$	1.0		2.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10\text{V}$ , $I_D = 9\text{A}$	7	11		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	$I_D = 9\text{A}$ , $V_{GS} = 10\text{V}$		40	55	$\text{m}\Omega$
	$R_{DS(on)}$	$I_D = 9\text{A}$ , $V_{GS} = 4\text{V}$		55	75	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}$ , $f = 1\text{MHz}$		1000		pF
Output Capacitance	$C_{oss}$	$V_{DS} = 10\text{V}$ , $f = 1\text{MHz}$		550		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10\text{V}$ , $f = 1\text{MHz}$		180		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	$t_r$	See specified Test Circuit		60		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		110		ns
Fall Time	$t_f$	See specified Test Circuit		125		ns
Diode Forward Voltage	$V_{SD}$	$I_S = 18\text{A}$ , $V_{GS} = 0$		1.0	1.5	V

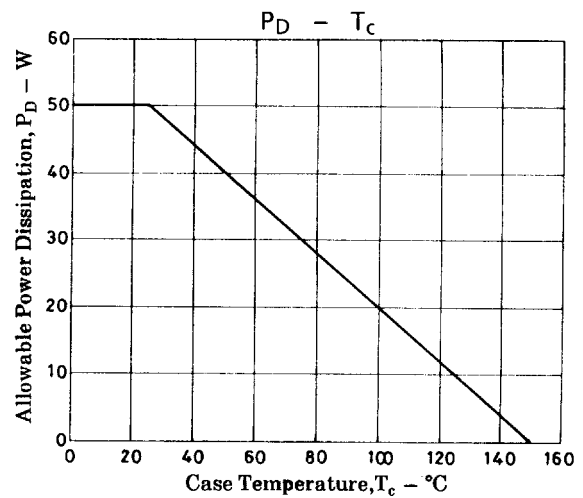
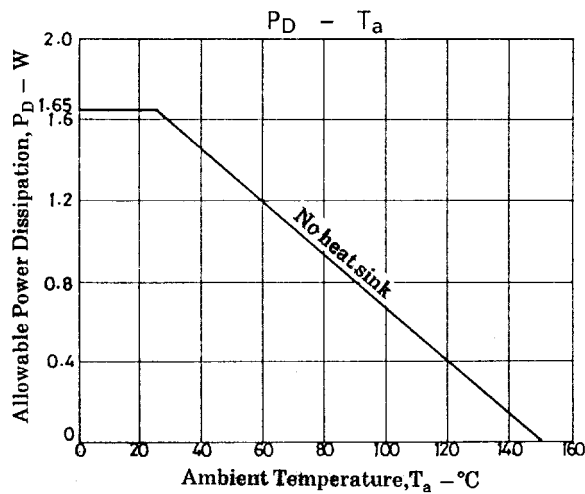
#### Switching Time Test Circuit



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