



# 2SK4221 — N-Channel Silicon MOSFET

## General-Purpose Switching Device

### Applications

#### Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Avalanche resistance guarantee.

#### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		500	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±30	V
Drain Current (DC)	I <sub>D</sub>		26	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	90	A
Allowable Power Dissipation	PD		2.5	W
		Tc=25°C	220	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E <sub>AS</sub>		608	mJ
Avalanche Current *2	I <sub>AV</sub>		14	A

Note : \*1 V<sub>DD</sub>=99V, L=5mH, I<sub>AV</sub>=14A

\*2 L≤5mH, Single pulse

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =0V	500			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =400V, V <sub>GS</sub> =0V			100	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V			±100	nA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	3		5	V

Marking : K4221

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# 2SK4221

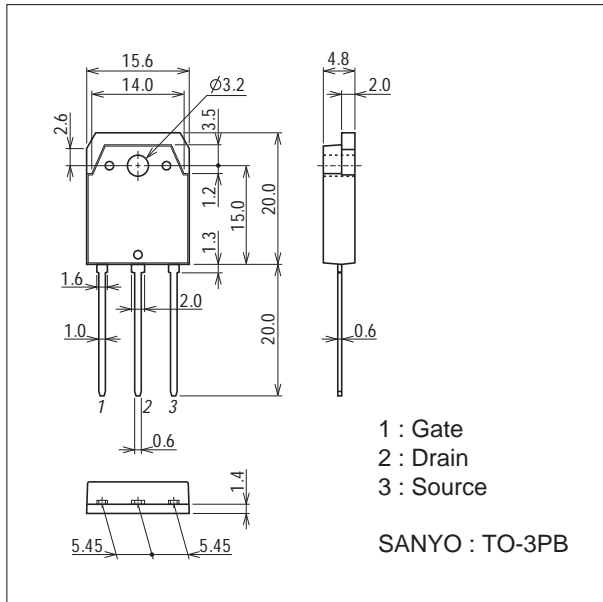
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=13A$	7.5	15.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=13A, V_{GS}=10V$		0.18	0.24	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		2250		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30V, f=1MHz$		450		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30V, f=1MHz$		90		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		44		ns
Rise Time	$t_r$	See specified Test Circuit.		156		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		224		ns
Fall Time	$t_f$	See specified Test Circuit.		94		ns
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=26A$		87		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200V, V_{GS}=10V, I_D=26A$		16		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200V, V_{GS}=10V, I_D=26A$		47		nC
Diode Forward Voltage	$V_{SD}$	$I_S=26A, V_{GS}=0V$		1.0	1.3	V

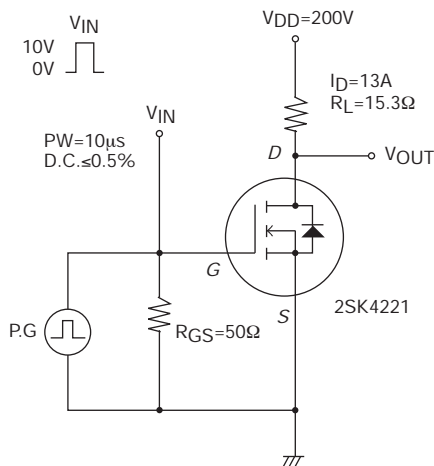
## Package Dimensions

unit : mm (typ)

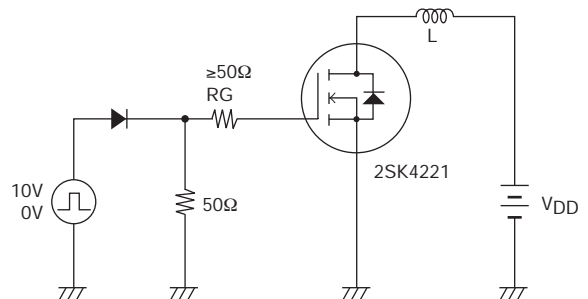
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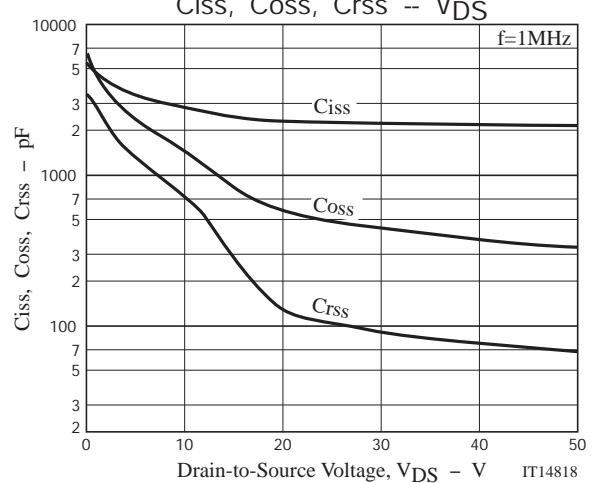
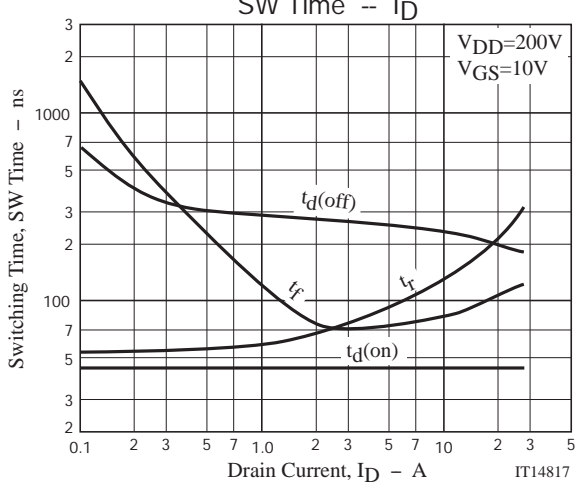
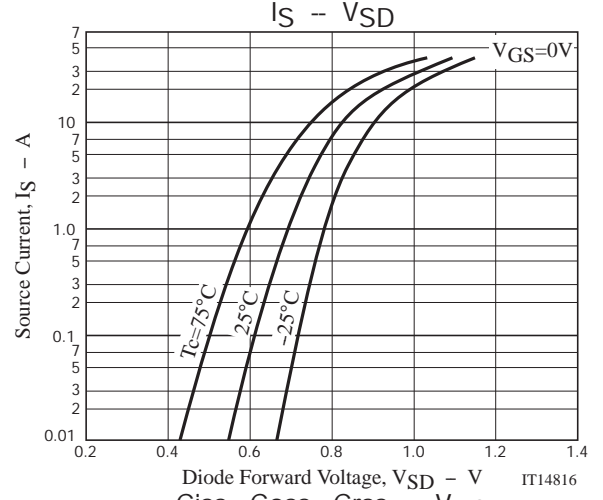
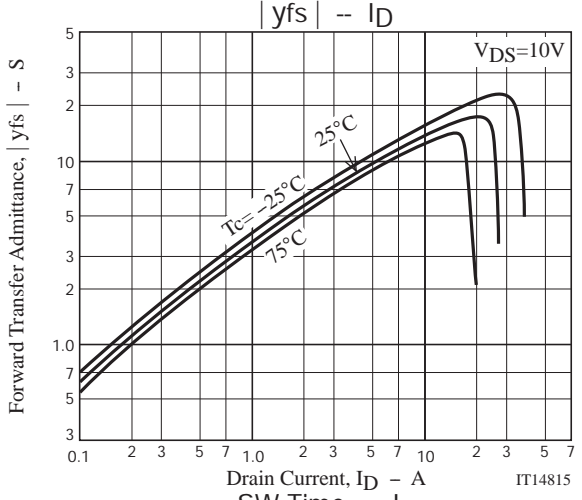
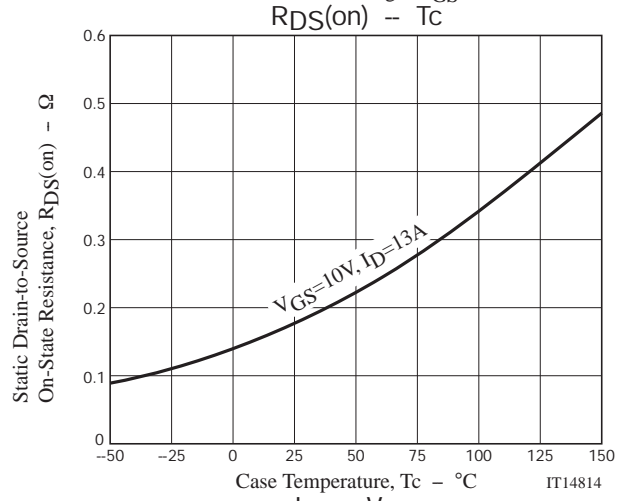
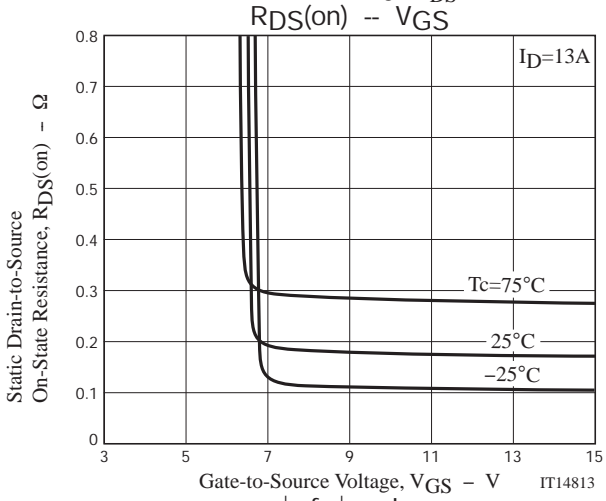
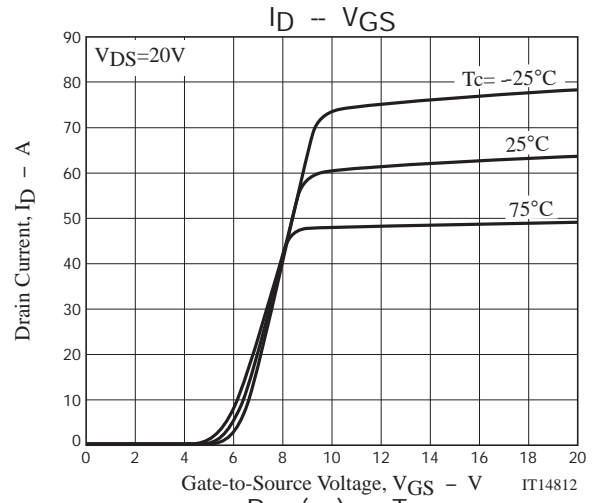
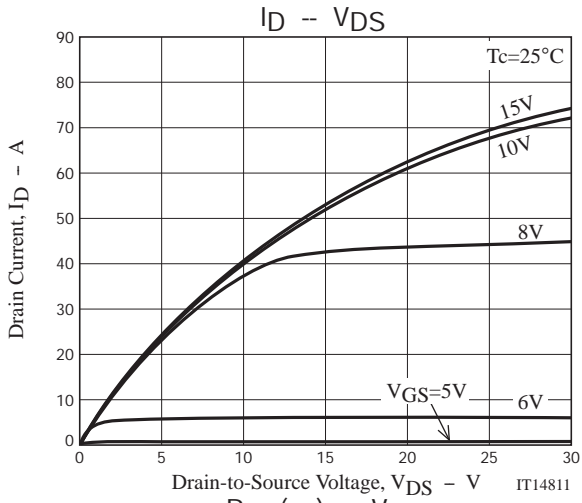


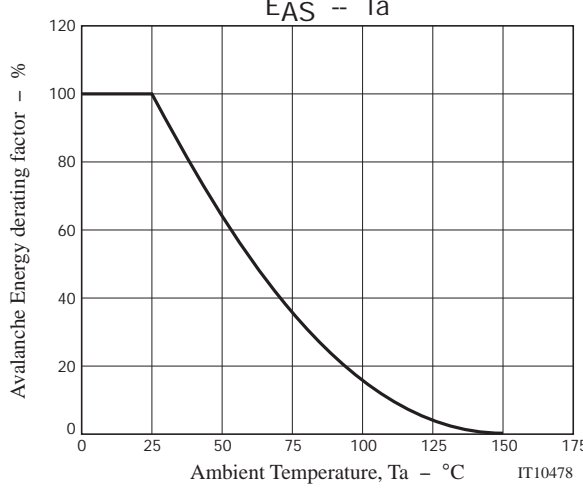
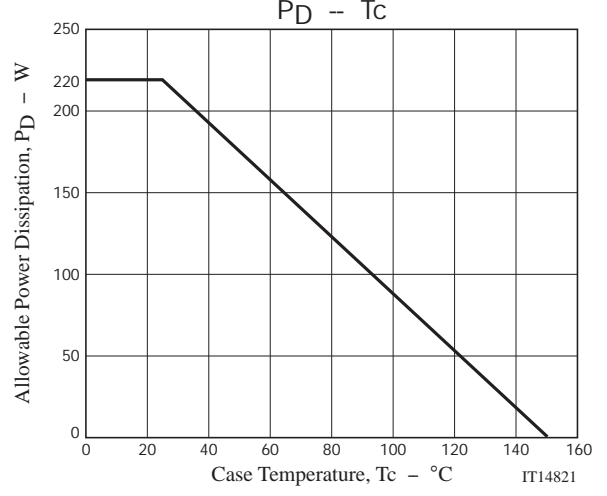
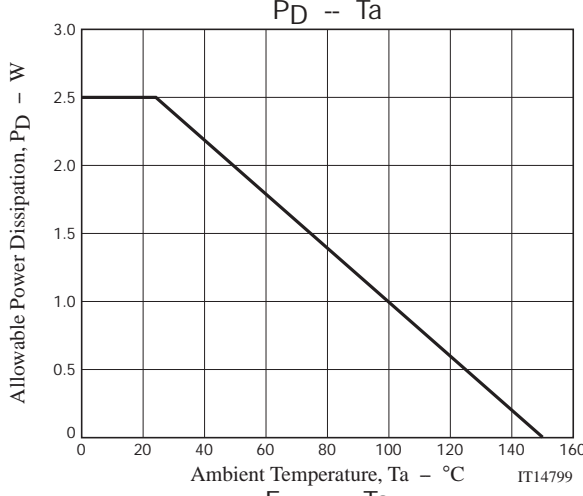
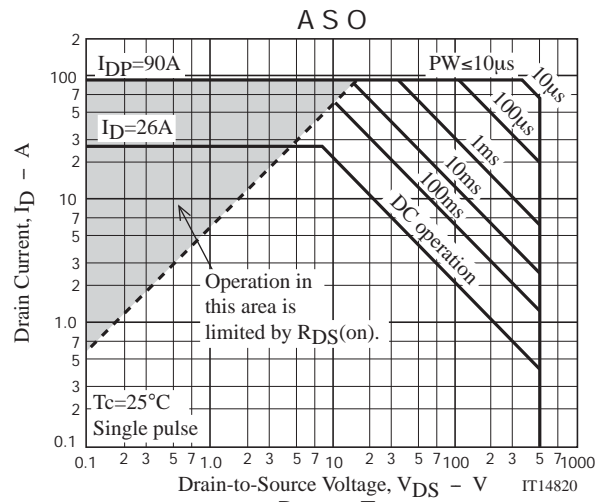
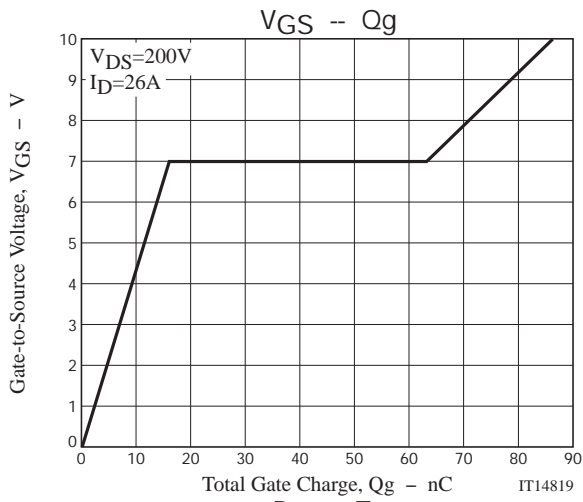
## Switching Time Test Circuit



## Avalanche Resistance Test Circuit







Note on usage : Since the 2SK4221 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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