



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 $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		500	V
Gate-to-Source Voltage	V_{GSS}		± 30	V
Drain Current (DC)	I_D		26	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	90	A
Allowable Power Dissipation	PD		2.5	W
		$T_c=25^\circ\text{C}$	220	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	EAS		608	mJ
Avalanche Current *2	I_{AV}		14	A

Note : *1 $V_{DD}=99\text{V}$, $L=5\text{mH}$, $I_{AV}=14\text{A}$

*2 $L \leq 5\text{mH}$, Single pulse

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}$, $V_{GS}=0\text{V}$	500			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=400\text{V}$, $V_{GS}=0\text{V}$			100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	3		5	V

Marking : K4221

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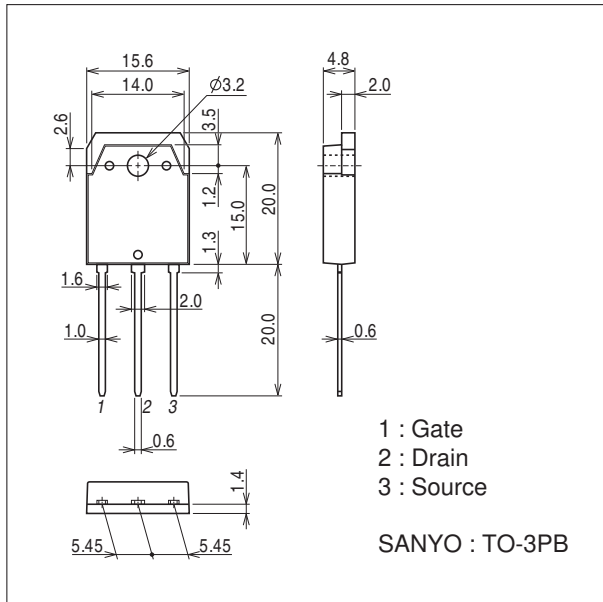
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=13A$	7.5	15.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=13A, V_{GS}=10V$		0.18	0.24	Ω
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		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

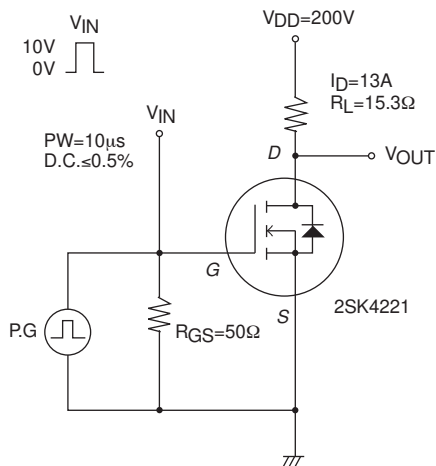
Package Dimensions

unit : mm (typ)

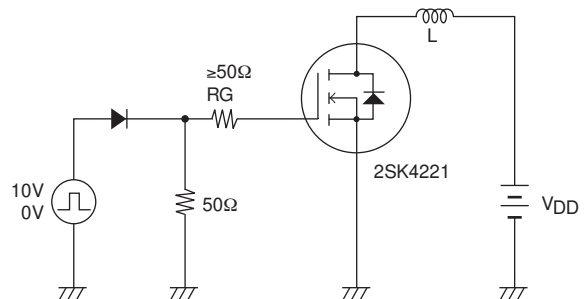
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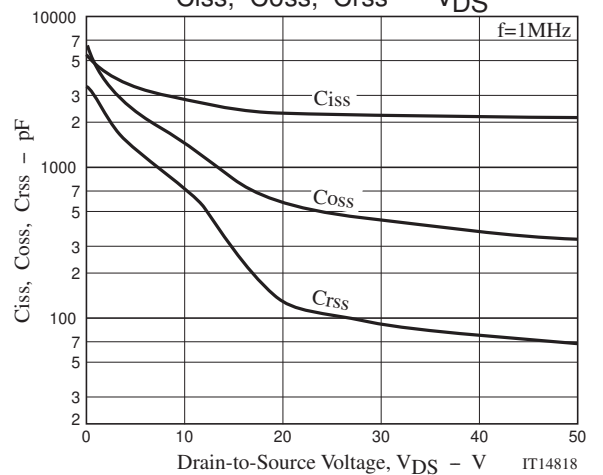
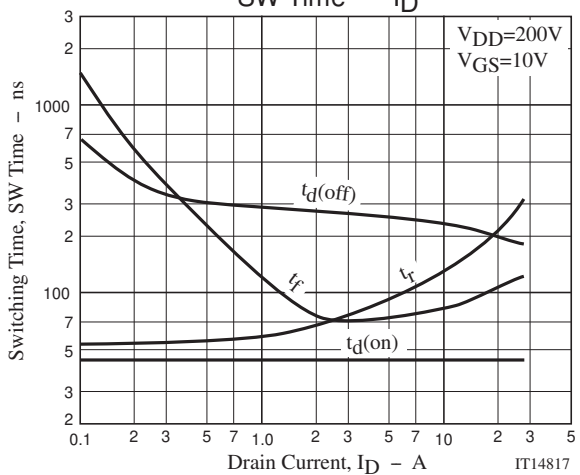
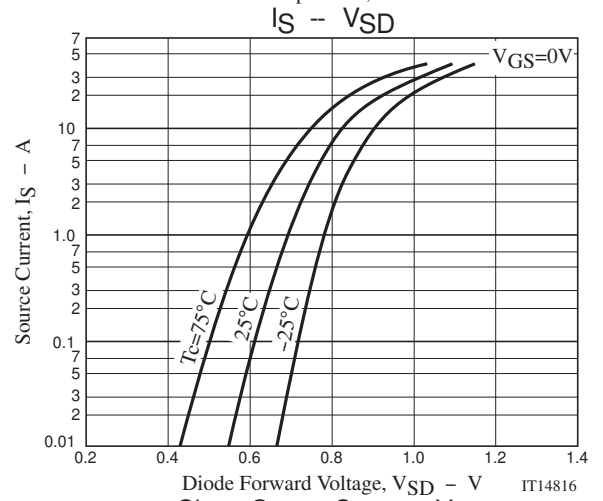
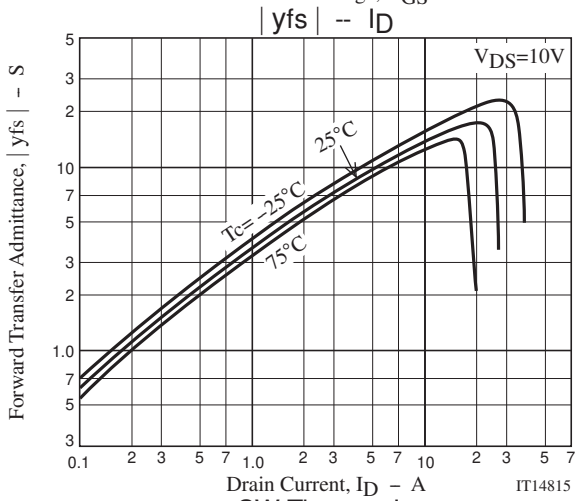
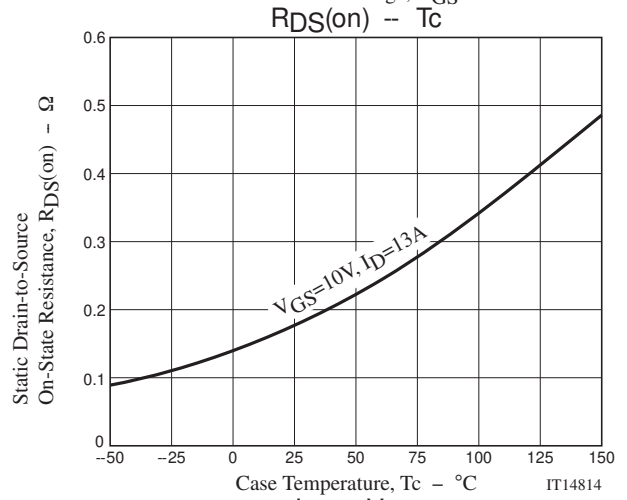
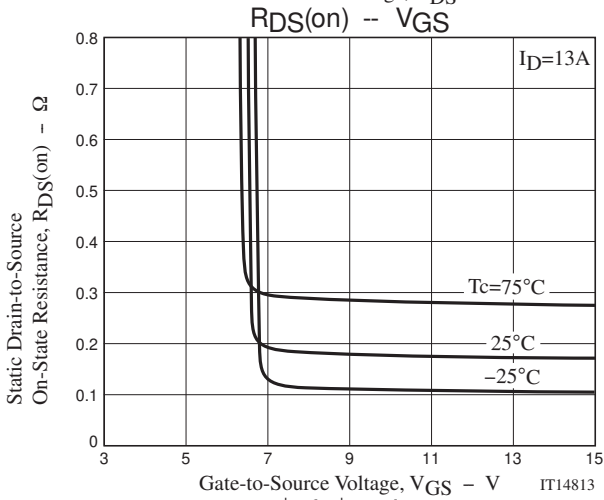
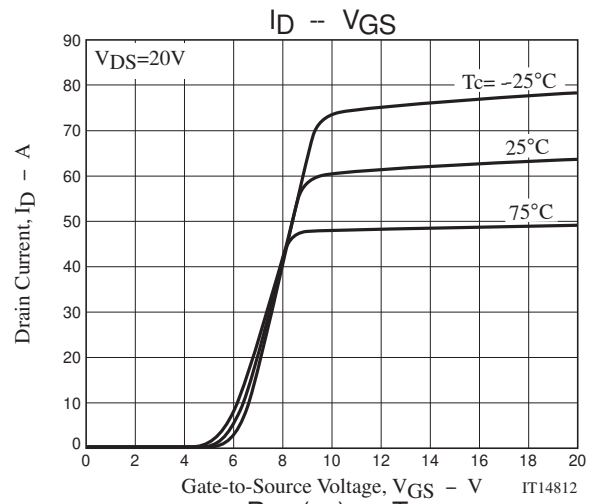
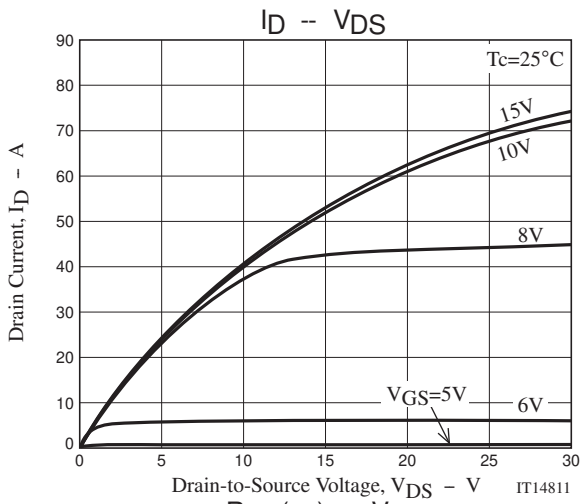


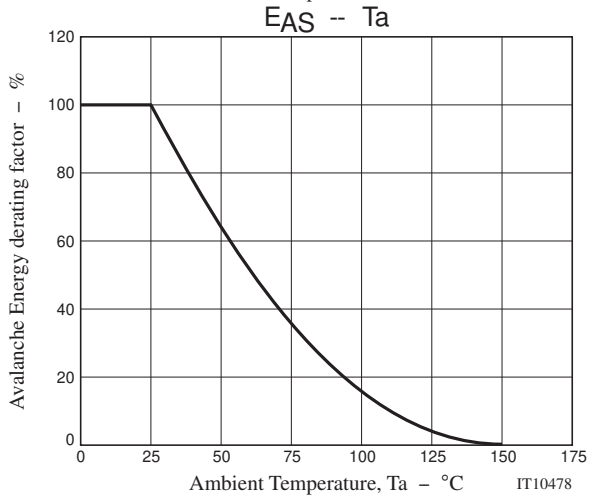
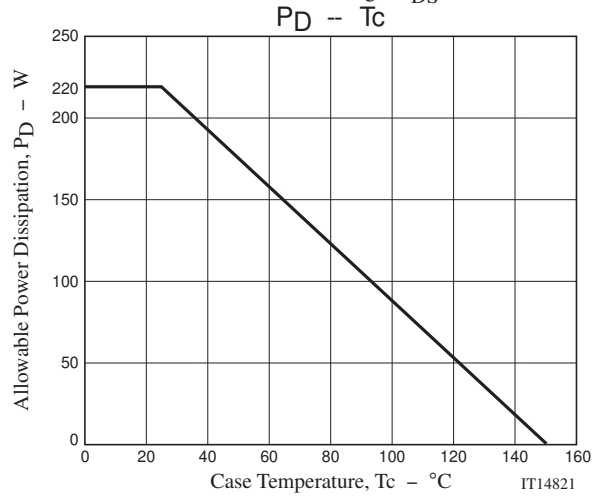
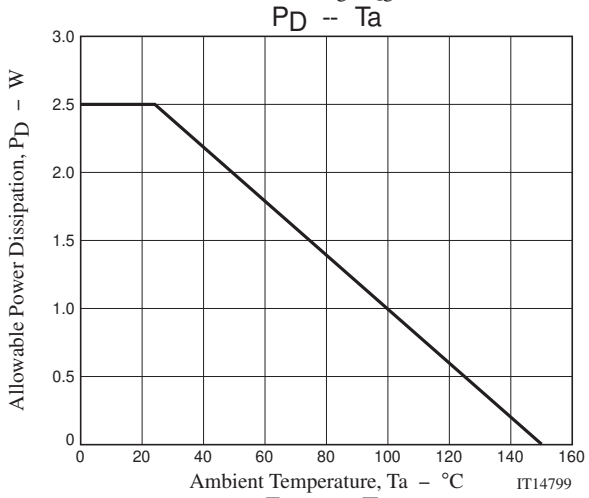
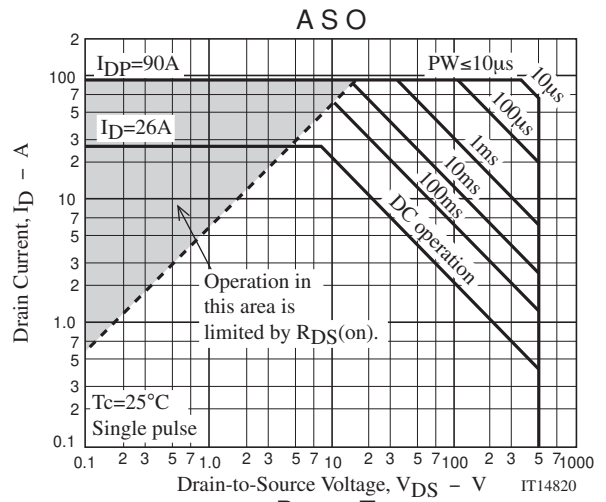
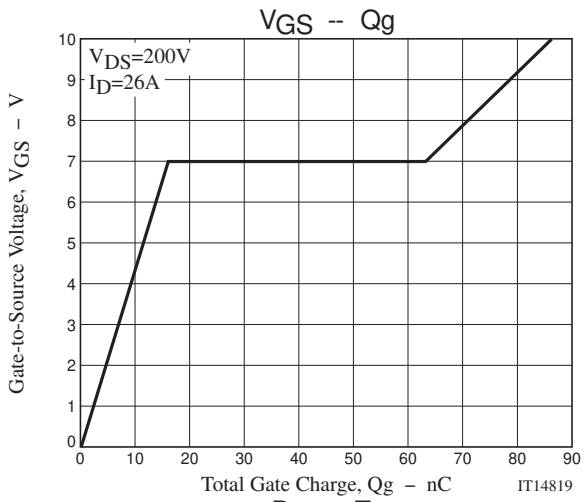
Switching Time Test Circuit



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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