



N-Channel Silicon MOSFET

2SK4209 — General-Purpose Switching Device Applications

Features

- Low ON-resistance, 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 _{DSS}		800	V
Gate-to-Source Voltage	V _{GSS}		±30	V
Drain Current (DC)	I _D		12	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	24	A
Allowable Power Dissipation	P _D		2.5	W
		Tc=25°C	190	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		410	mJ
Avalanche Current *2	I _{AV}		12	A

Note : *1 V_{DD}=99V, L=5mH, I_{AV}=12A

*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 _(BR) DSS	I _D =10mA, V _{GS} =0V	800			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =640V, V _{GS} =0V			1.0	mA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	2.0		4.0	V

Marking : K4209

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2SK4209

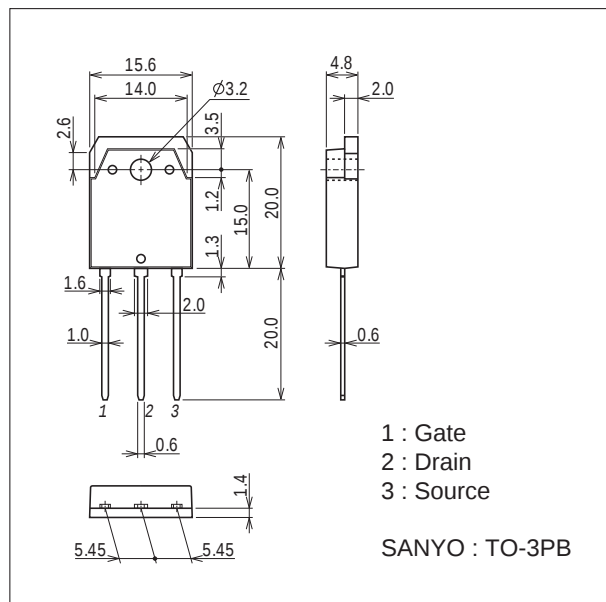
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20V, I_D=6A$	3.4	6.8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=6A, V_{GS}=10V$		0.83	1.08	Ω
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		1500		pF
Output Capacitance	C_{oss}	$V_{DS}=30V, f=1MHz$		250		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=30V, f=1MHz$		87		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		27		ns
Rise Time	t_r	See specified Test Circuit.		72		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		260		ns
Fall Time	t_f	See specified Test Circuit.		77		ns
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=12A$		75		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=200V, V_{GS}=10V, I_D=12A$		12		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=200V, V_{GS}=10V, I_D=12A$		38		nC
Diode Forward Voltage	V_{SD}	$I_S=12A, V_{GS}=0V$		0.85	1.2	V

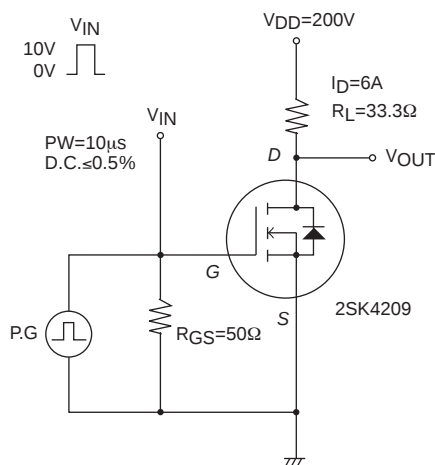
Package Dimensions

unit : mm (typ)

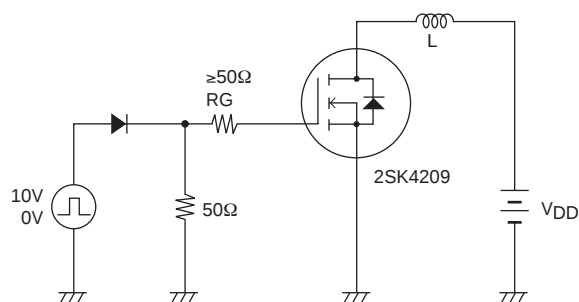
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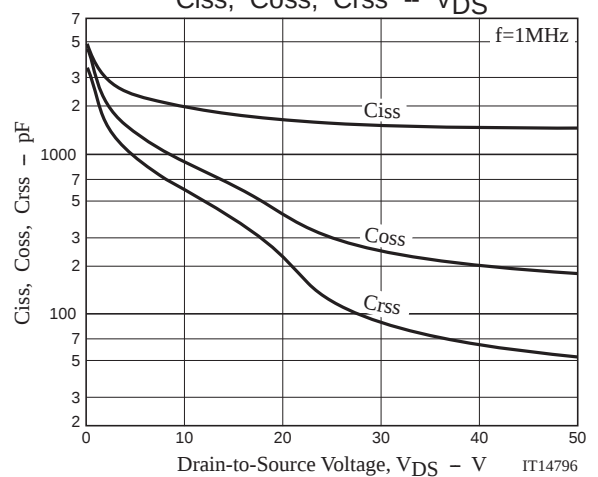
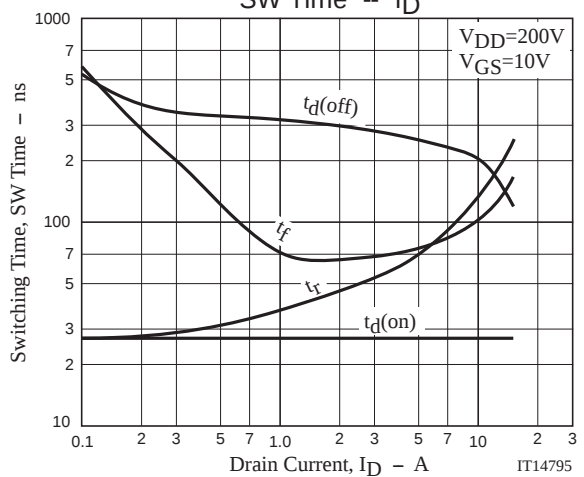
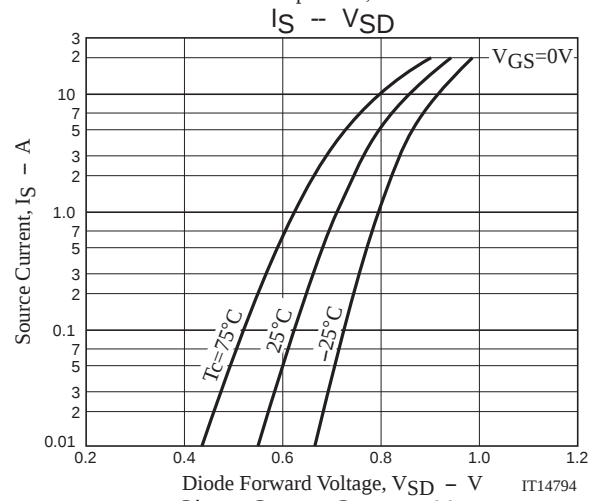
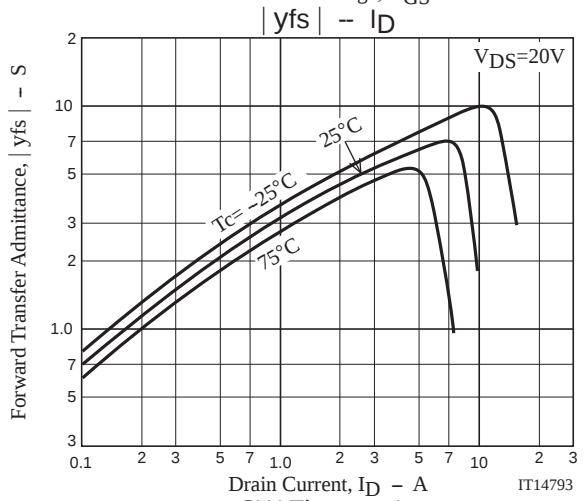
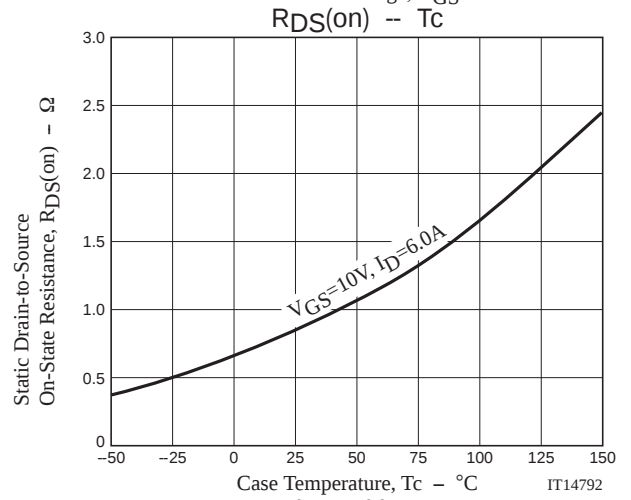
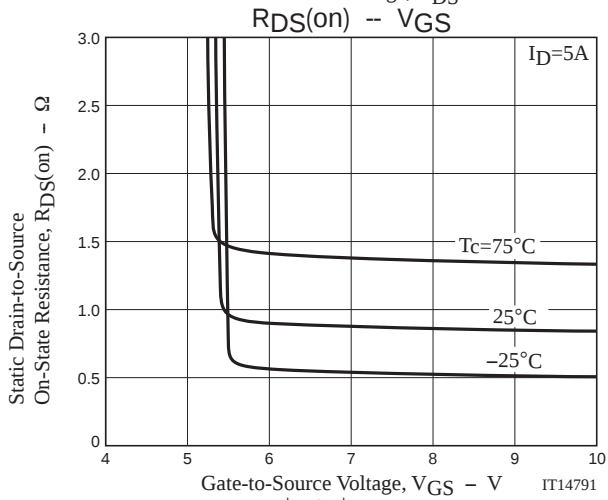
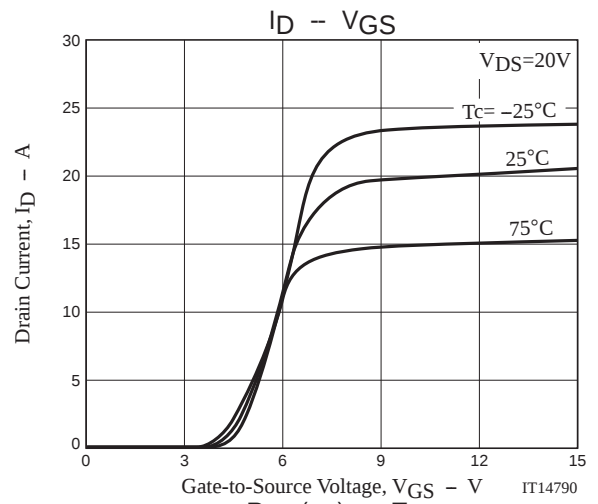
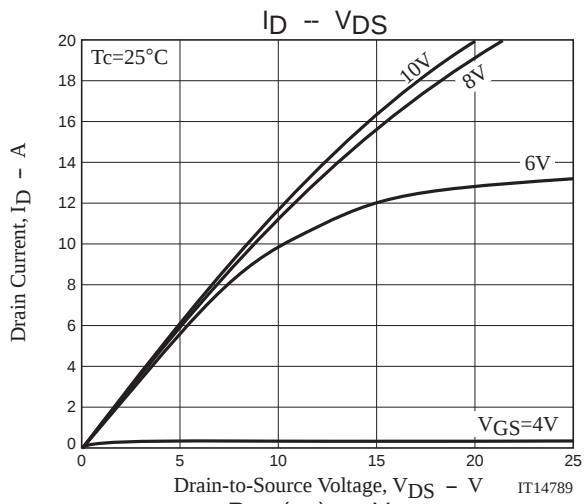


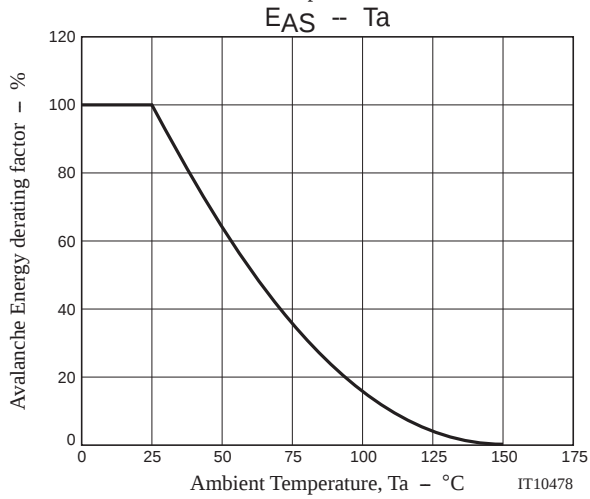
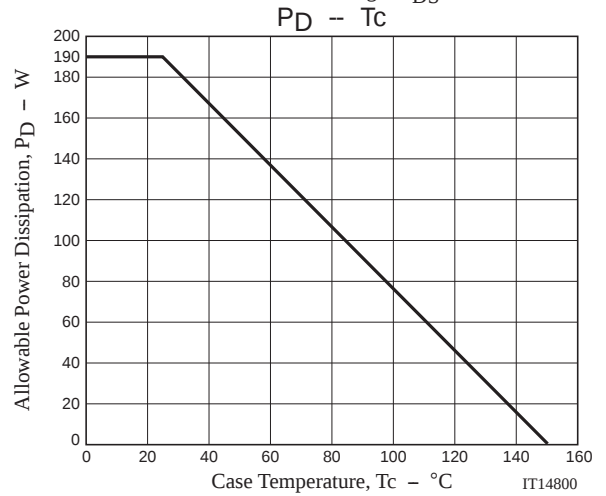
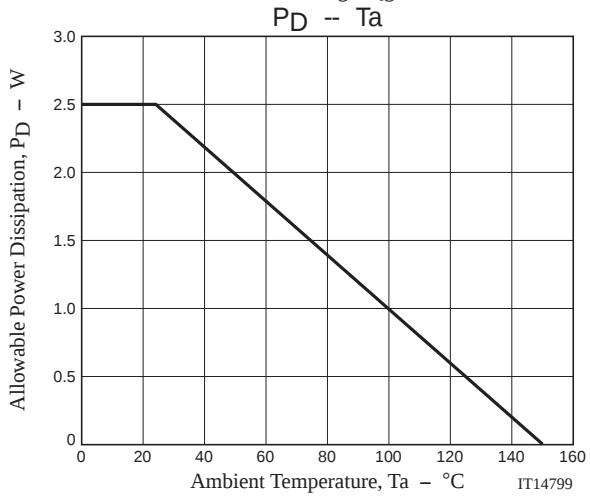
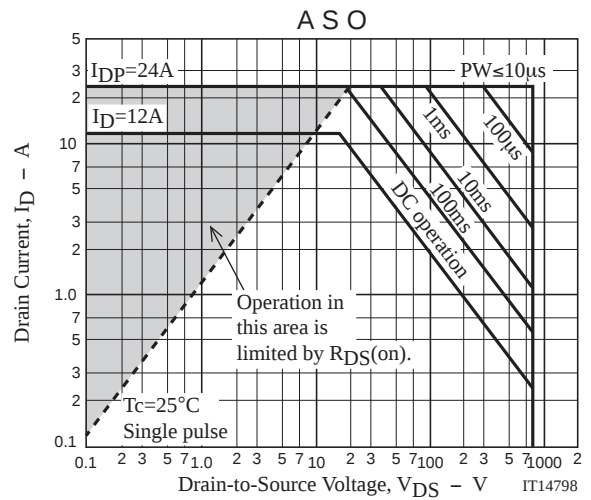
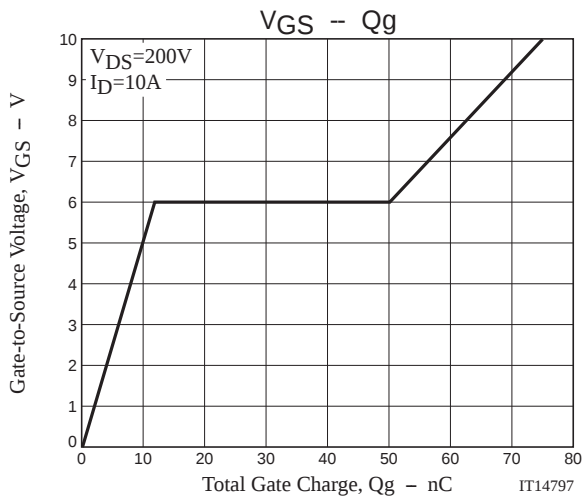
Switching Time Test Circuit



Avalanche Resistance Test Circuit







Note on usage : Since the 2SK4209 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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