



2SK4164 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Load switching applications.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		45	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		100	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	400	A
Allowable Power Dissipation	P _D	Tc=25°C	50	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		850	mJ
Avalanche Current *2	I _{AV}		70	A

Note : *1 V_{DD}=30V, L=200μH, I_{AV}=70A

*2 L≤200μH, 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 =1mA, V _{GS} =0V	45			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =45V, V _{GS} =0V			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA

Marking : K4164

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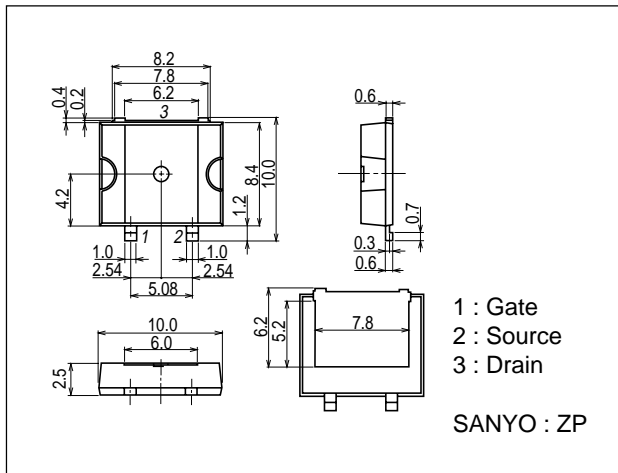
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=50A$	46	77		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=10V$		2.5	3.3	$m\Omega$
	$R_{DS(on)2}$	$I_D=50A, V_{GS}=4V$		3.6	5.0	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		11500		pF
Output Capacitance	C_{oss}	$V_{DS}=20V, f=1MHz$		1500		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=20V, f=1MHz$		1200		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		70		ns
Rise Time	t_r	See specified Test Circuit.		1050		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		710		ns
Fall Time	t_f	See specified Test Circuit.		650		ns
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=100A$		220		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=20V, V_{GS}=10V, I_D=100A$		34		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=20V, V_{GS}=10V, I_D=100A$		47		nC
Diode Forward Voltage	V_{SD}	$I_S=100A, V_{GS}=0V$		0.9	1.2	V

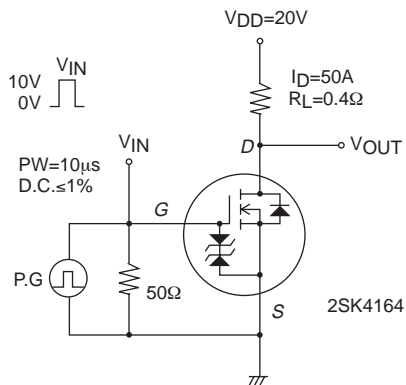
Package Dimensions

unit : mm (typ)

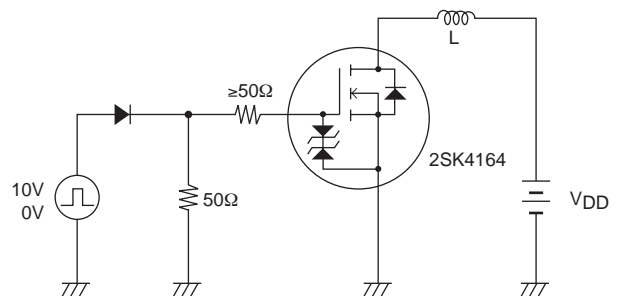
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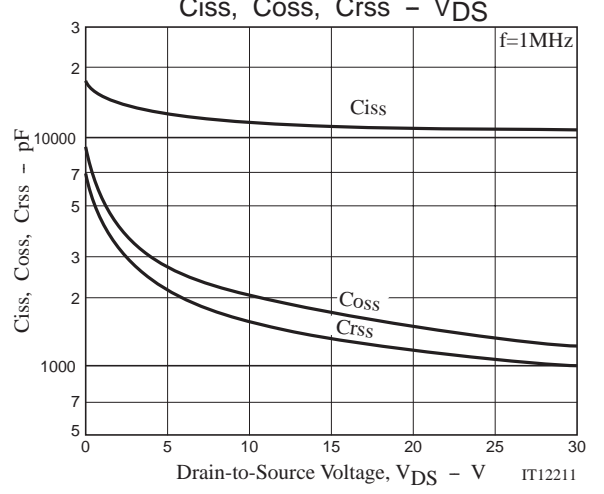
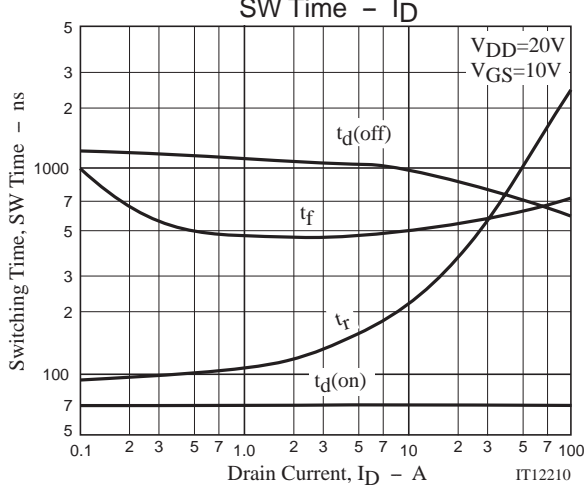
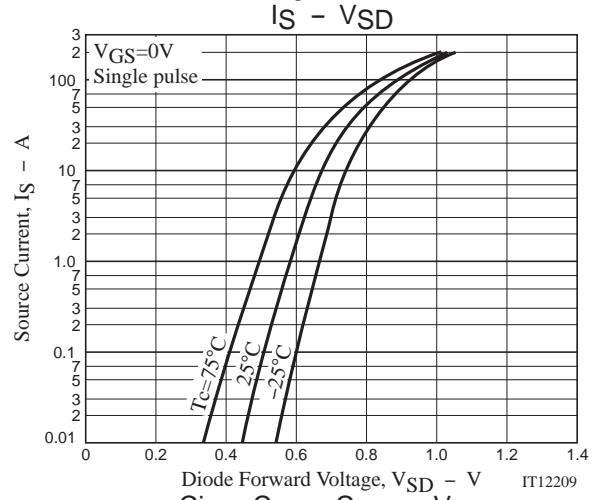
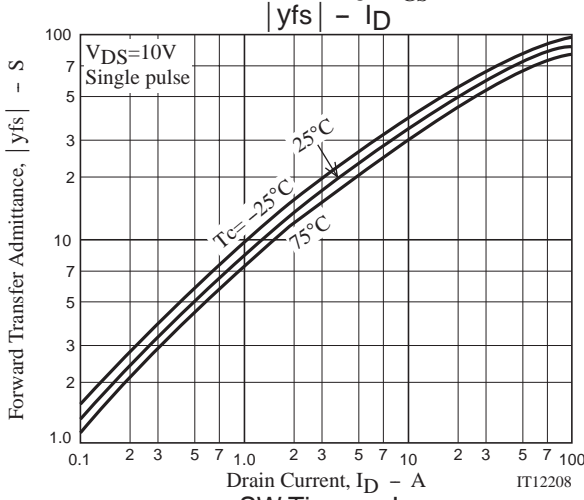
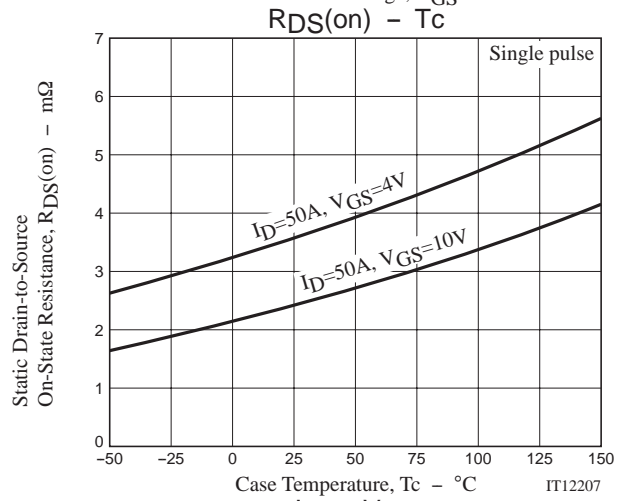
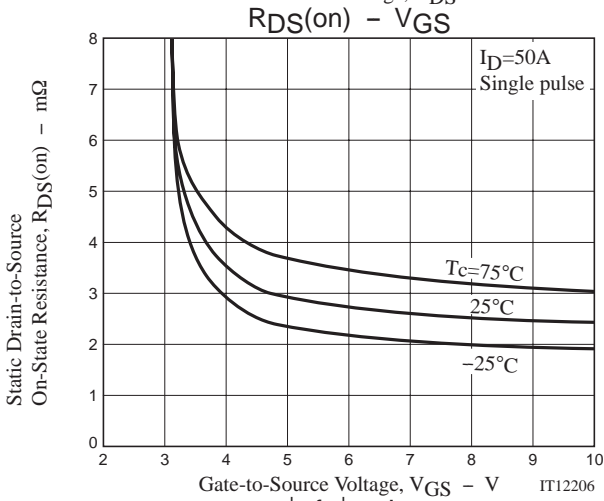
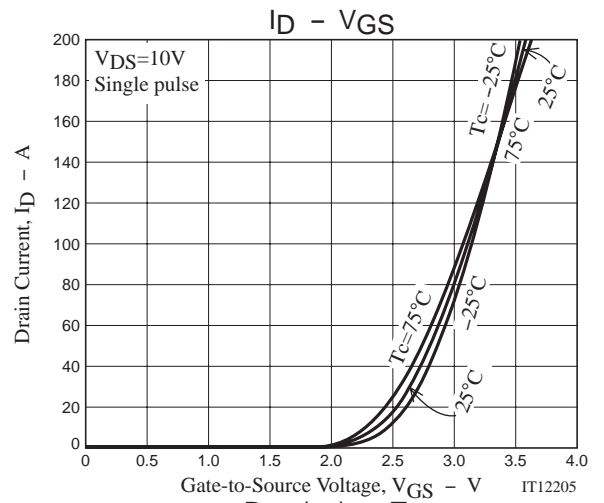
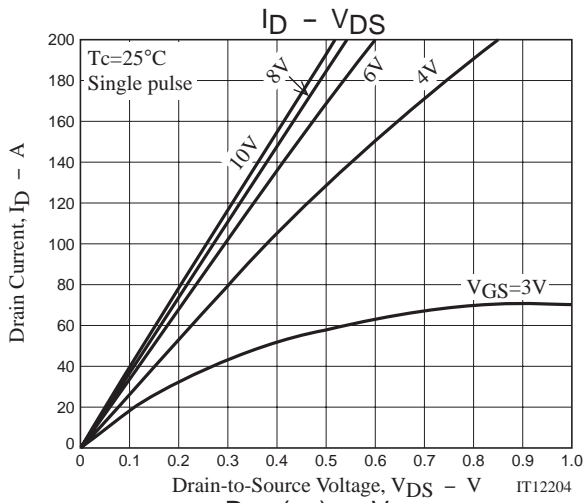
Switching Time Test Circuit

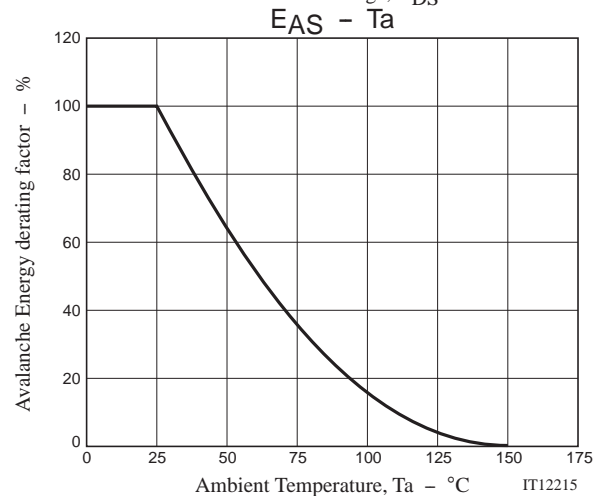
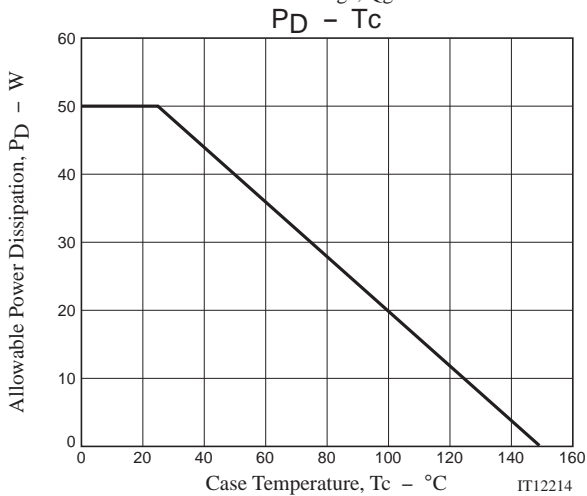
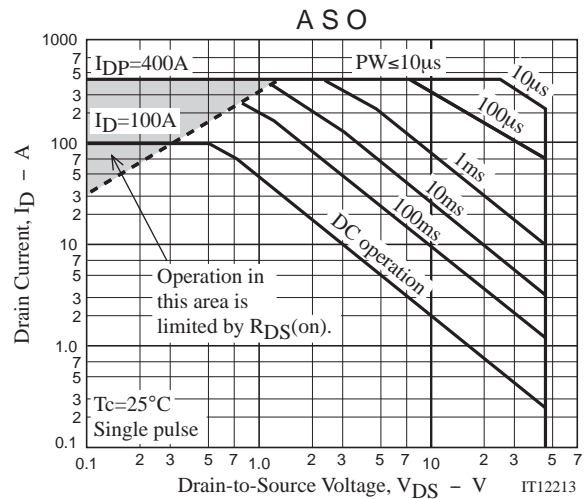
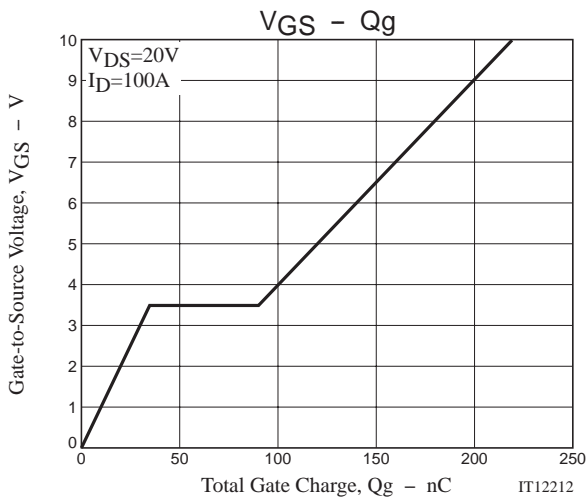


Avalanche Resistance Test Circuit



2SK4164





Note on usage : Since the 2SK4164 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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