



N-Channel Silicon MOSFET

# 2SK4164 — 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 <sub>DSS</sub>		45	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		100	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	400	A
Allowable Power Dissipation	P <sub>D</sub>	Tc=25°C	50	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>		850	mJ
Avalanche Current *2	I <sub>AV</sub>		70	A

Note : \*1 V<sub>DD</sub>=30V, L=200μH, I<sub>AV</sub>=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 <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	45			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =45V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±16V, V <sub>DS</sub> =0V			±10	μA

Marking : K4164

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## 2SK4164

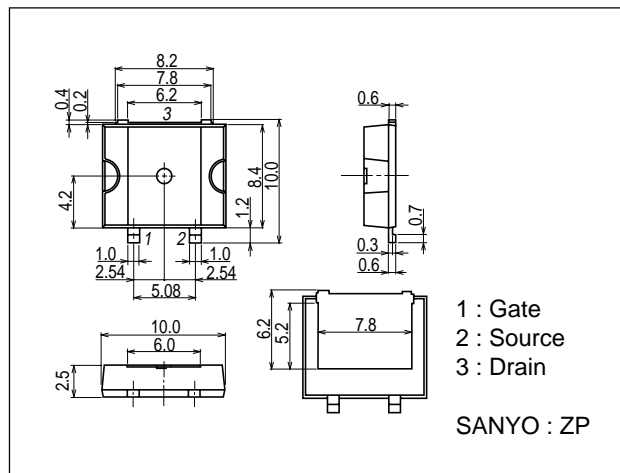
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=50A$	46	77		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=10V$		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

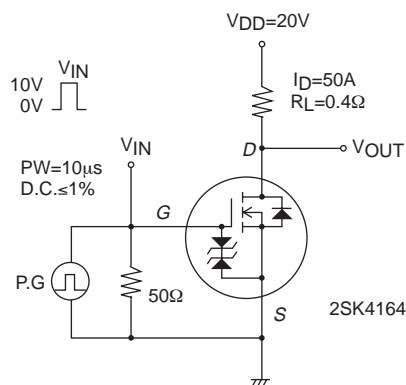
### Package Dimensions

unit : mm (typ)

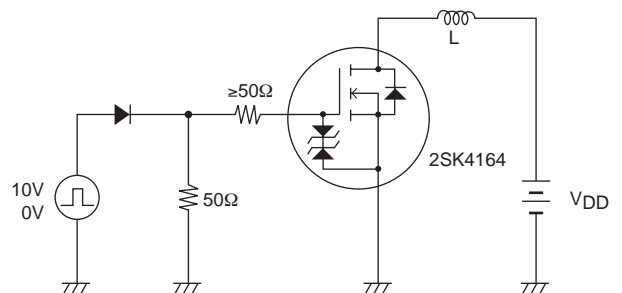
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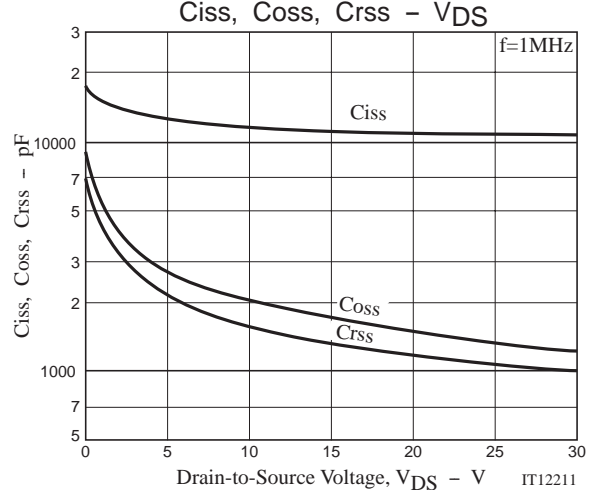
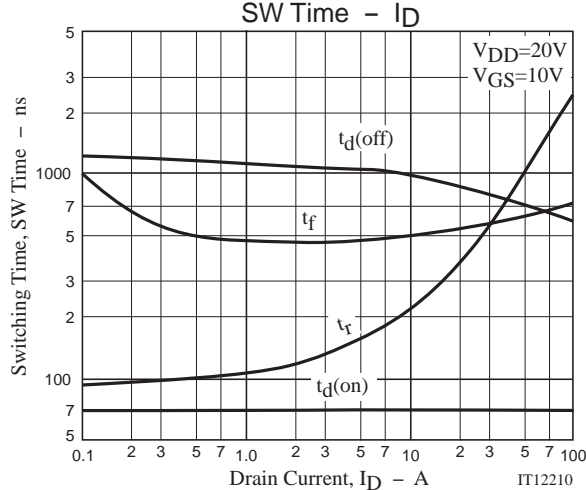
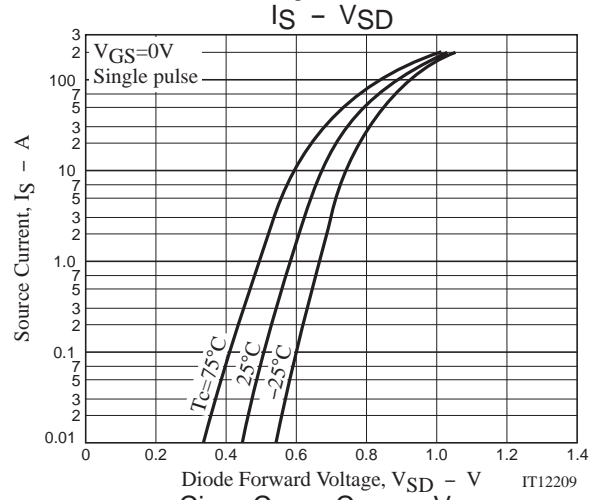
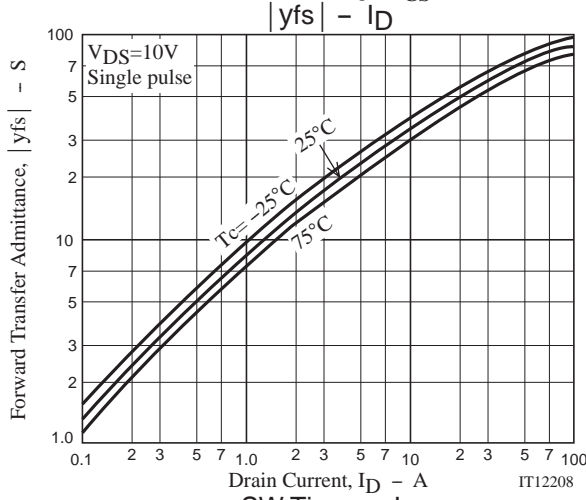
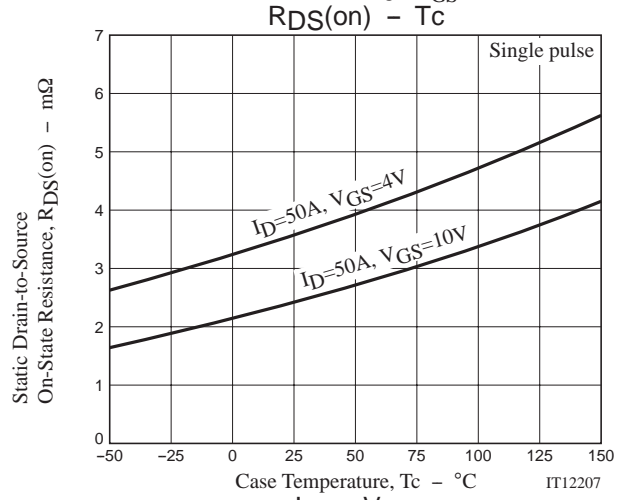
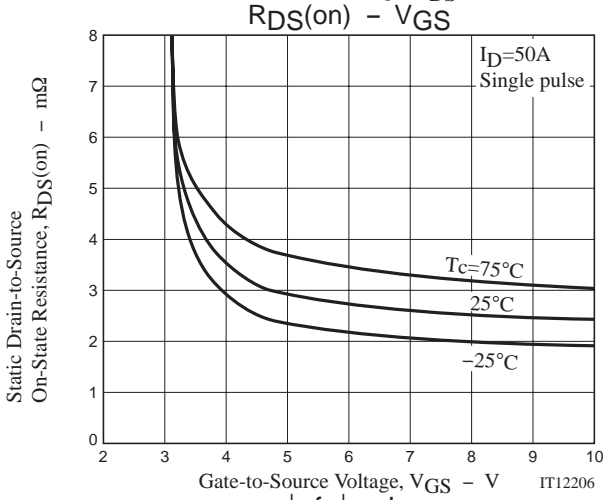
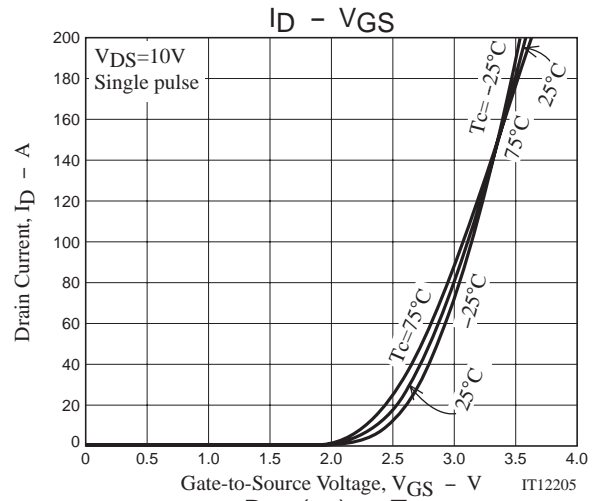
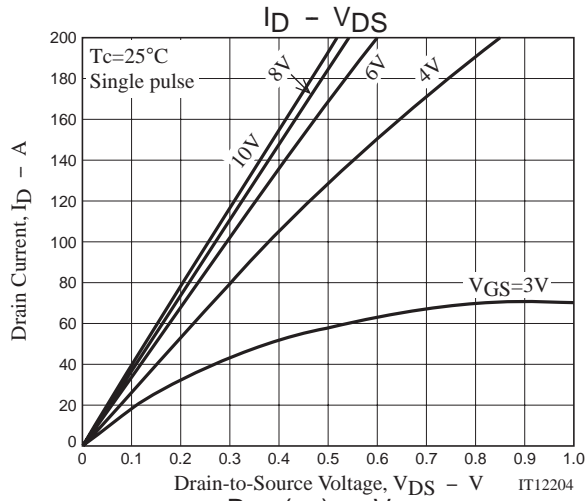


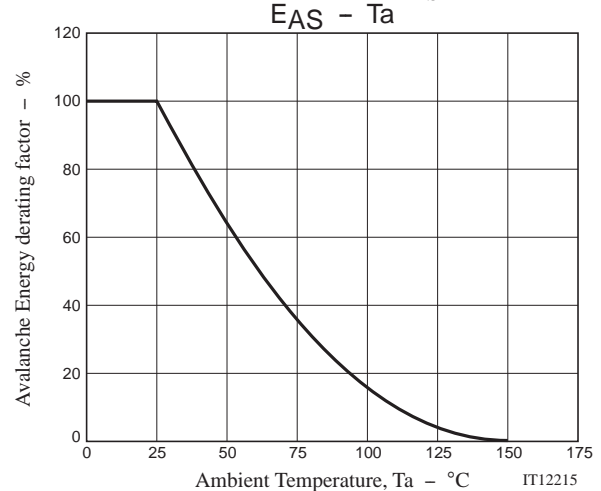
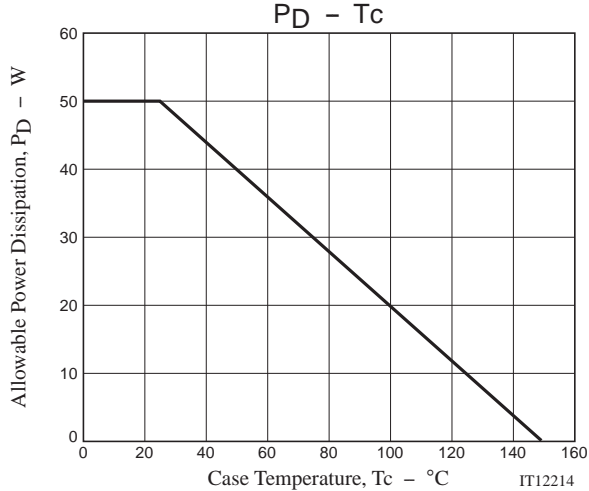
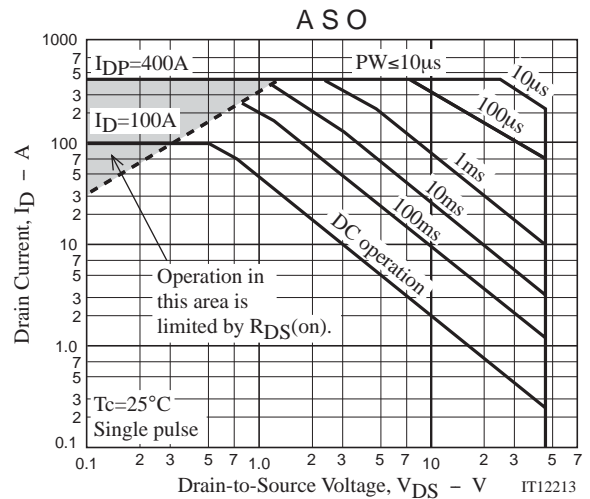
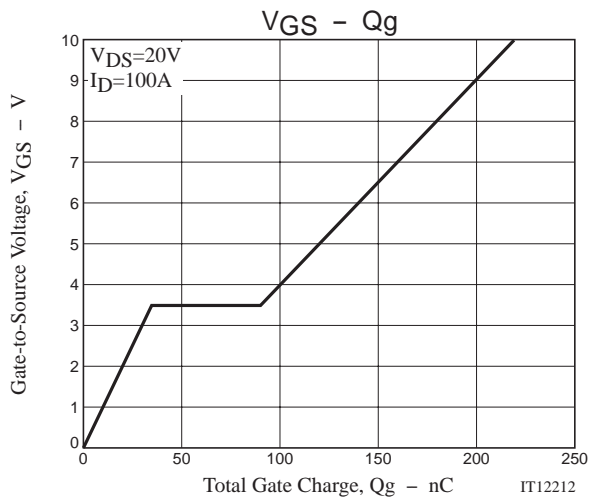
### Switching Time Test Circuit



### Avalanche Resistance Test Circuit







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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