



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SK4125 — 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>		600	V
Gate-to-Source Voltage	V <sub>GS</sub>		±30	V
Drain Current (DC)	I <sub>D</sub>		17	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	52	A
Allowable Power Dissipation	P <sub>D</sub>		2.5	W
		Tc=25°C (SANYO's ideal heat dissipation condition)*1	170	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *2	E <sub>AS</sub>		86.5	mJ
Avalanche Current *3	I <sub>AV</sub>		17	A

\*1 SANYO's condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

\*2 V<sub>DD</sub>=99V, L=500μH, I<sub>AV</sub>=17A

\*3 L≤500μH, single pulse

Marking : K4125

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# 2SK4125

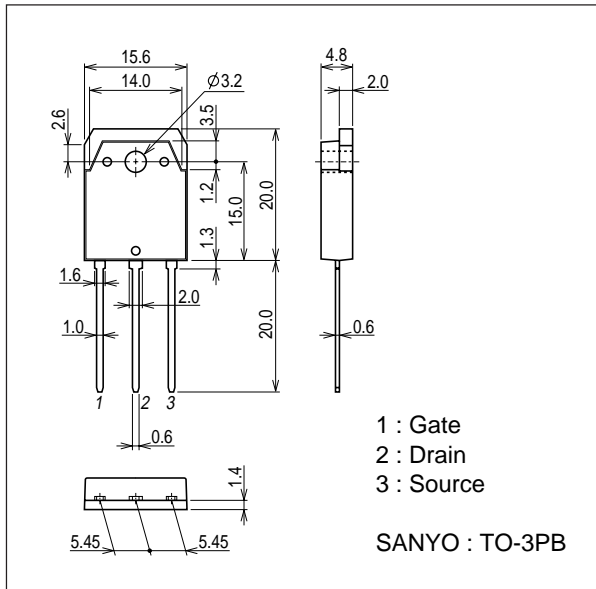
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	600			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=480V, V_{GS}=0V$			100	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=8.5A$	4.5	9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=7A, V_{GS}=10V$		0.47	0.61	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		1200		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30V, f=1MHz$		220		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30V, f=1MHz$		50		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		26.5		ns
Rise Time	$t_r$	See specified Test Circuit.		82		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		145		ns
Fall Time	$t_f$	See specified Test Circuit.		52		ns
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=17A$		46		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200V, V_{GS}=10V, I_D=17A$		8.3		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200V, V_{GS}=10V, I_D=17A$		26.7		nC
Diode Forward Voltage	$V_{SD}$	$I_S=17A, V_{GS}=0V$		1.0	1.3	V

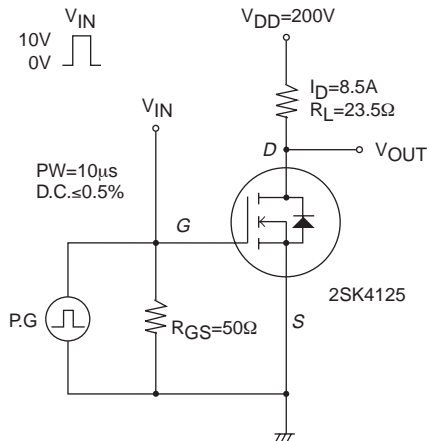
## Package Dimensions

unit : mm (typ)

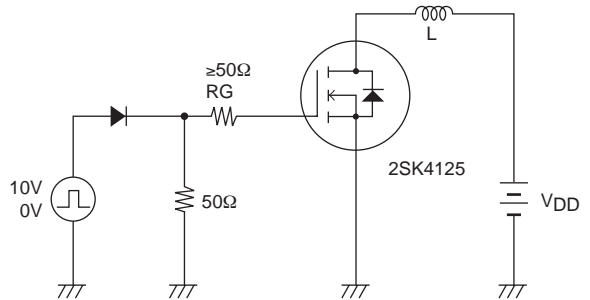
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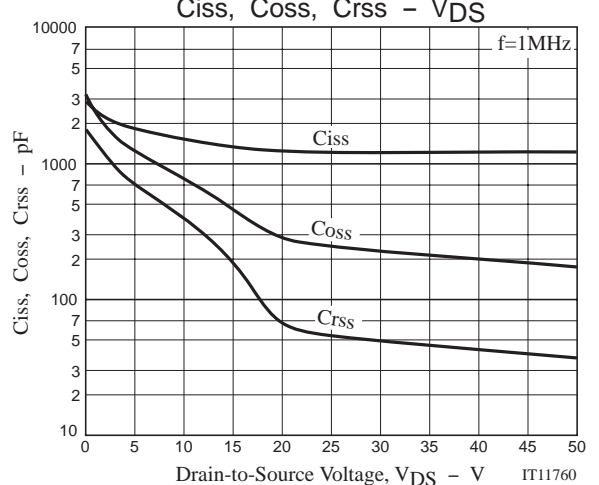
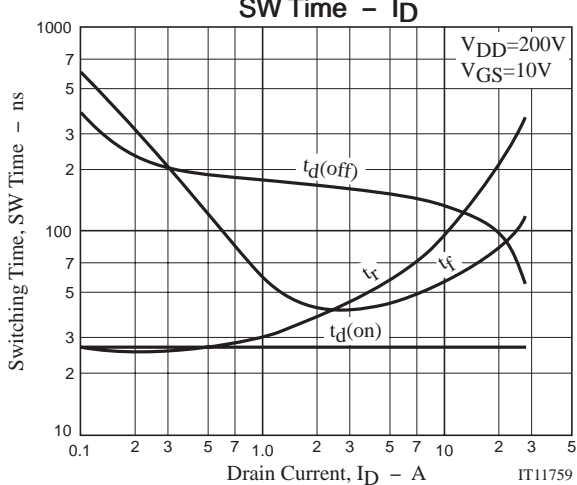
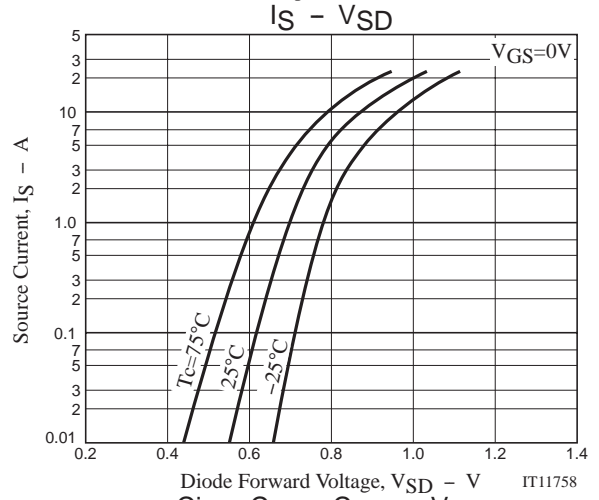
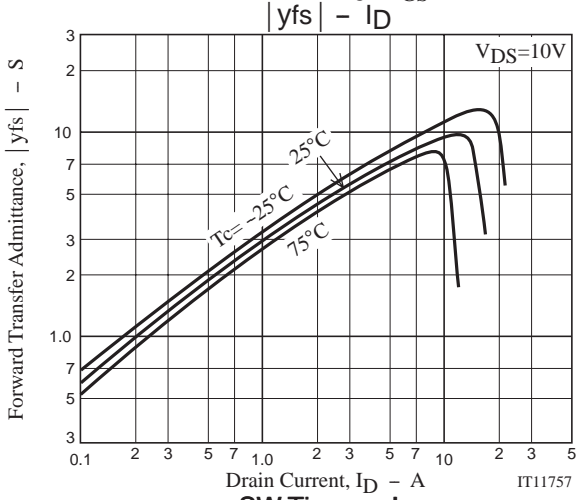
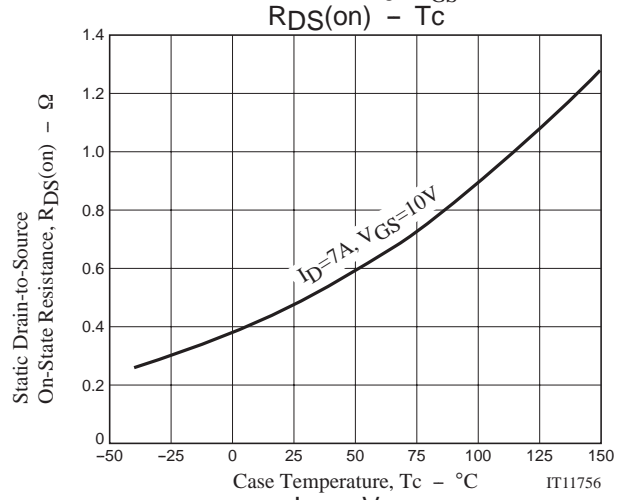
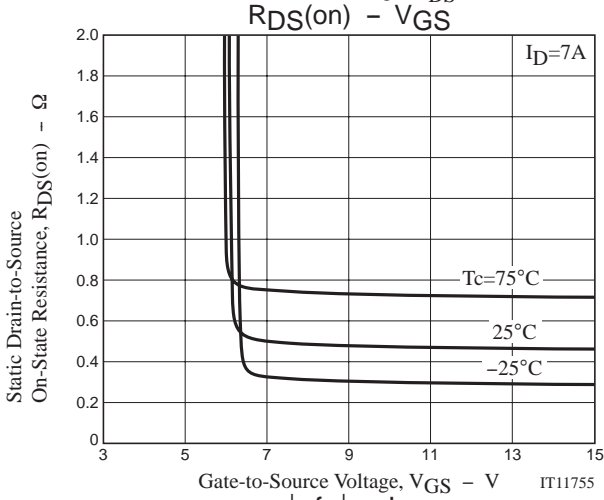
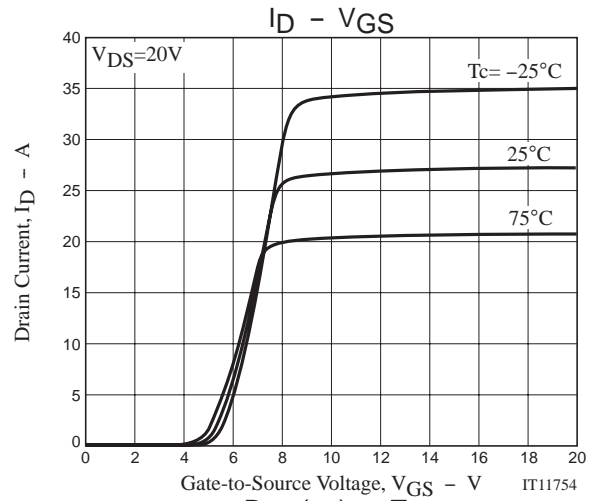
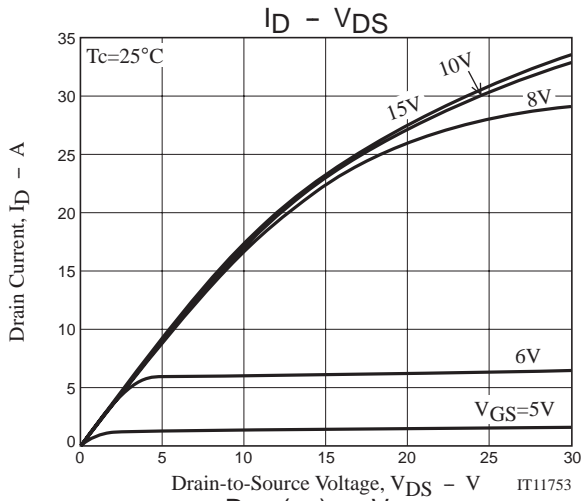
## Switching Time Test Circuit



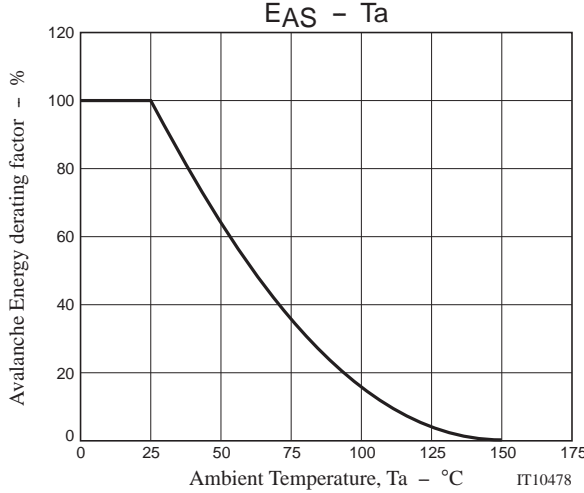
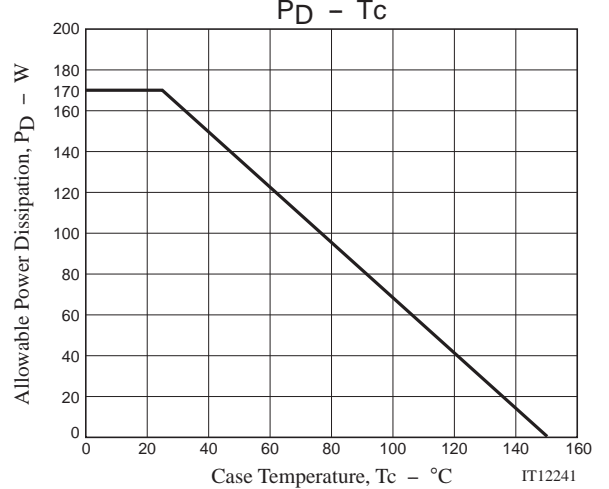
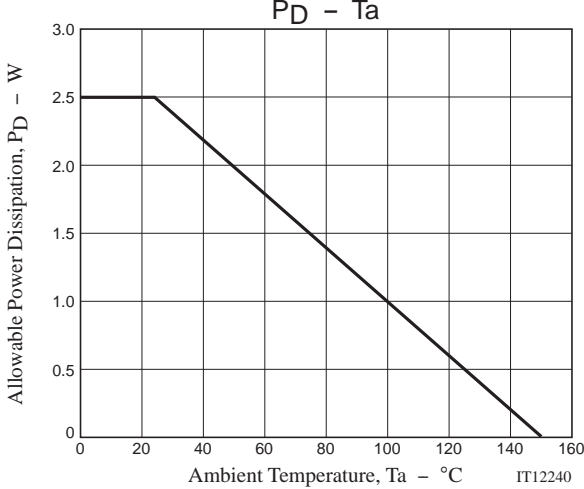
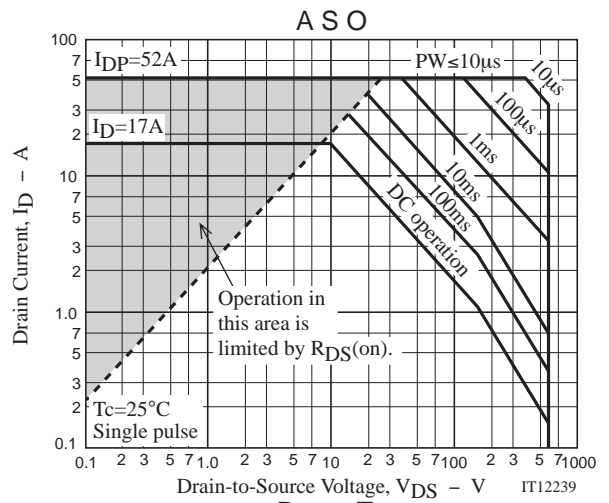
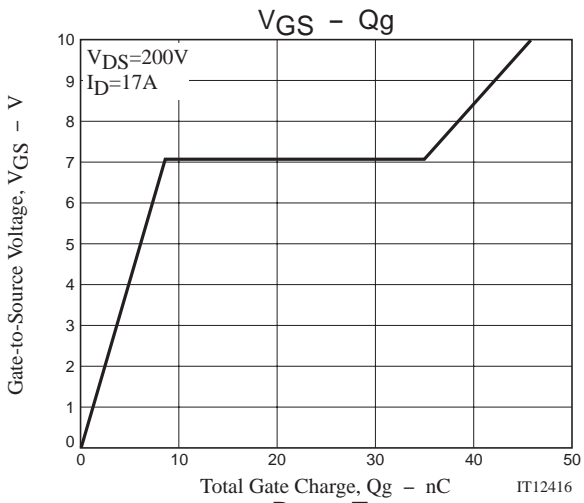
## Avalanche Resistance Test Circuit



# 2SK4125



# 2SK4125



Note on usage : Since the 2SK4125 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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