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SANYO Semiconductors

# DATA SHEET

## 2SK3827 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- 4V drive.
- Ultrahigh-speed switching.
- Motor drive, DC / DC converter.
- Avalanche resistance guarantee.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		100	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		40	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	160	A
Allowable Power Dissipation	P <sub>D</sub>		1.75	W
		T <sub>c</sub> =25°C	60	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>		190	mJ
Avalanche Current *2	I <sub>AV</sub>		40	A

Note : \*1 V<sub>DD</sub>=20V, L=200μH, I<sub>AV</sub>=40A

\*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> =0	100			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±16V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.2		2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =20A	18.5	31		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =20A, V <sub>GS</sub> =10V		26	34	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =20A, V <sub>GS</sub> =4V		31	43	mΩ

Marking : K3827

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## 2SK3827

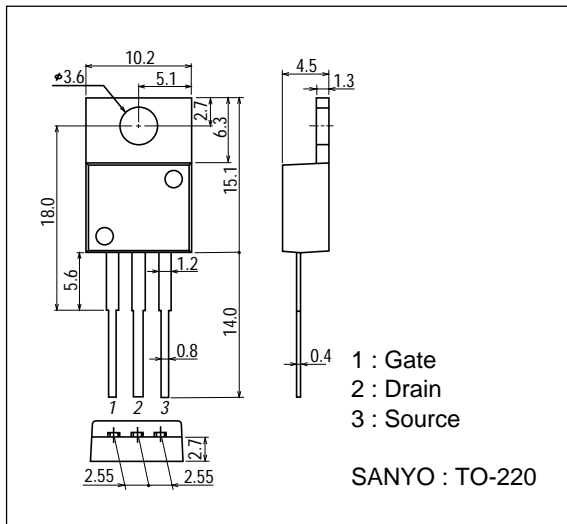
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		4200		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		300		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		250		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		30		ns
Rise Time	$t_r$	See specified Test Circuit.		68		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		300		ns
Fall Time	$t_f$	See specified Test Circuit.		110		ns
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=40A$		79		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=50V, V_{GS}=10V, I_D=40A$		14		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=50V, V_{GS}=10V, I_D=40A$		18		nC
Diode Forward Voltage	$V_{SD}$	$I_S=40A, V_{GS}=0$		1.0	1.2	V

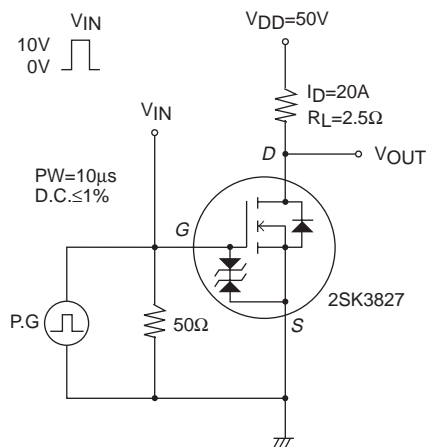
### Package Dimensions

unit : mm

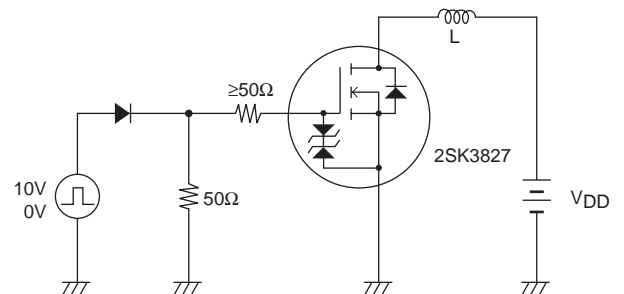
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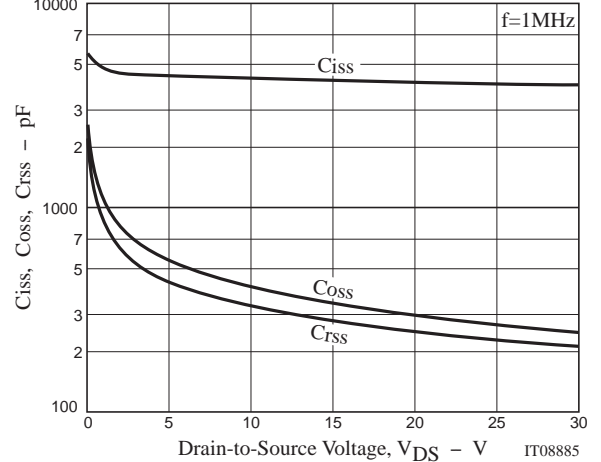
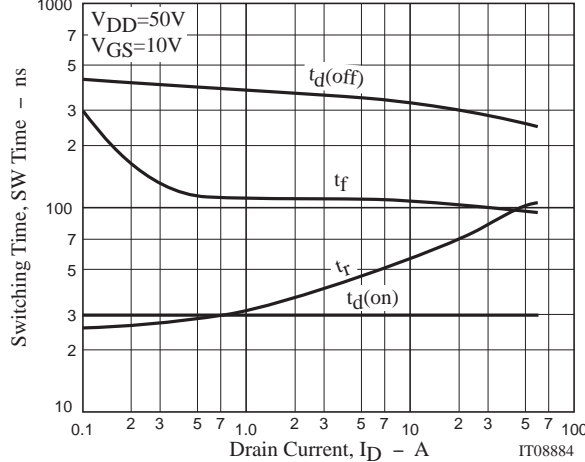
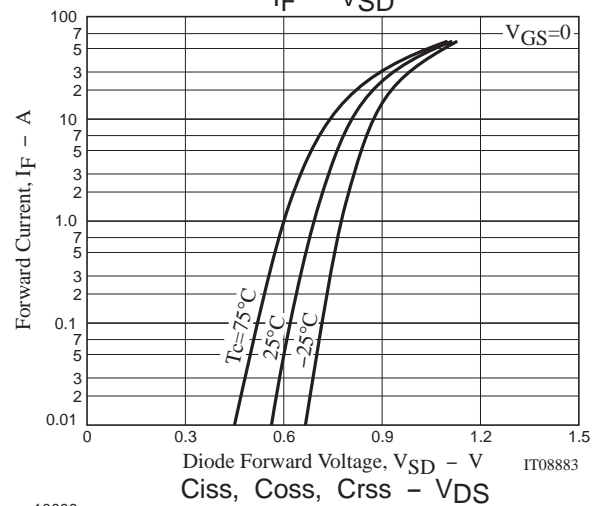
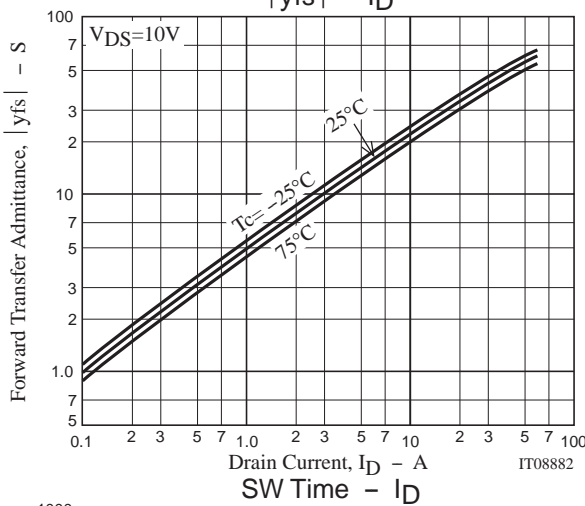
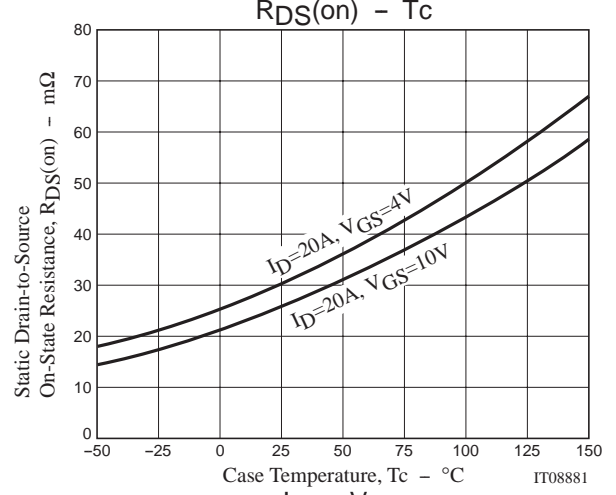
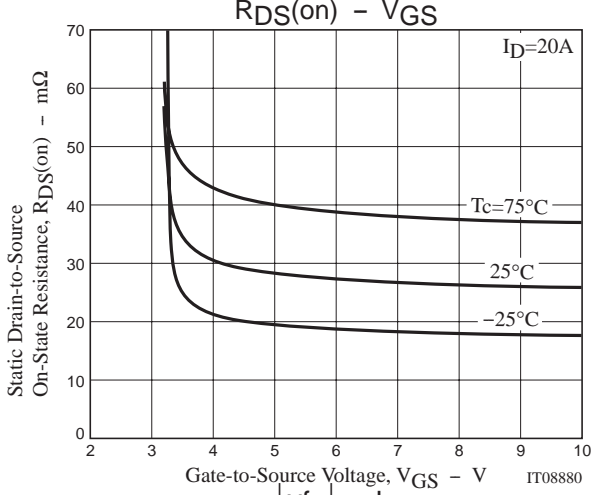
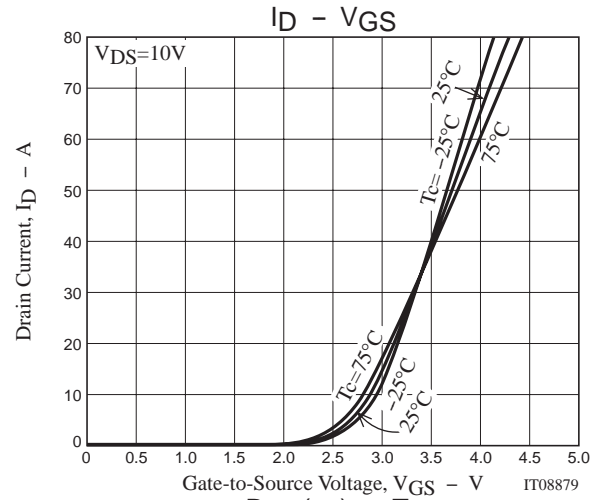
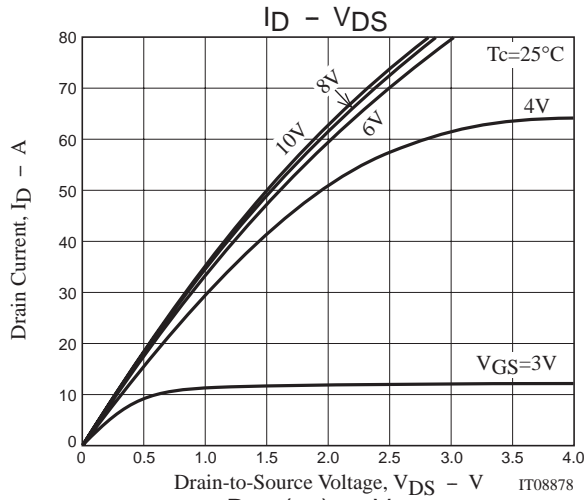
### Switching Time Test Circuit



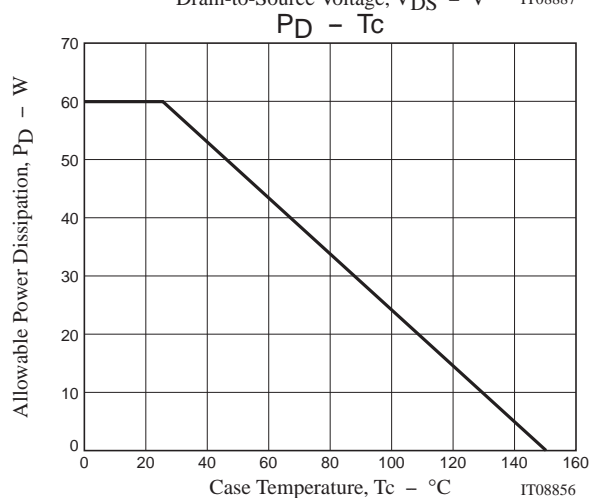
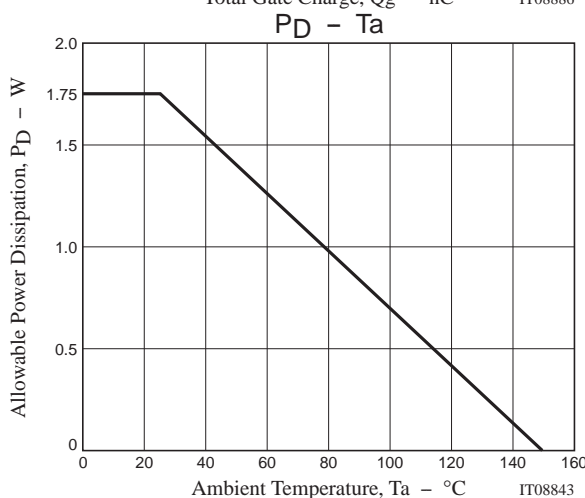
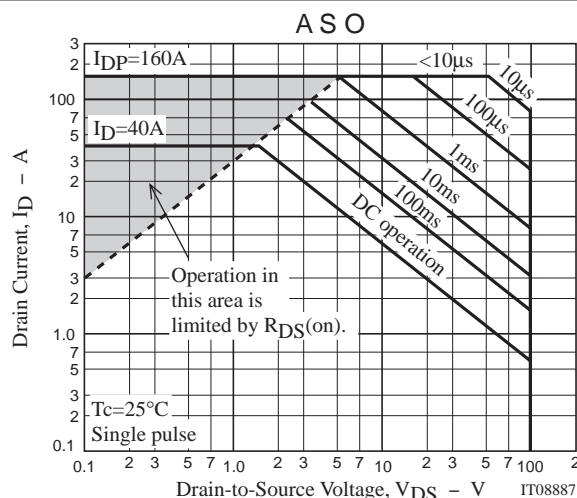
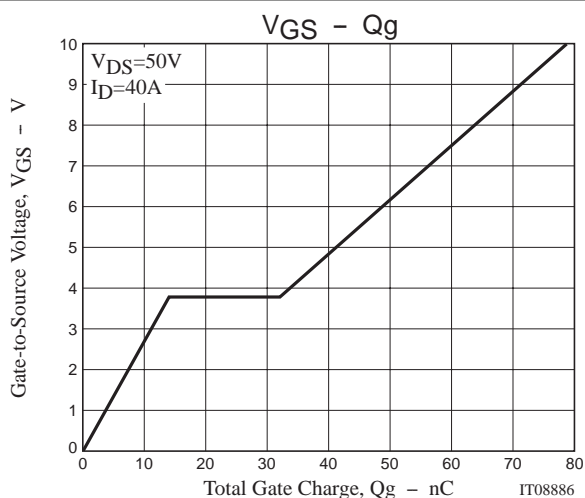
### Avalanche Resistance Test Circuit



**2SK3827**



## 2SK3827



Note on usage : Since the 2SK3827 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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