

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
270V	200mΩ@10V	16A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

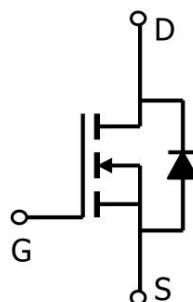
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

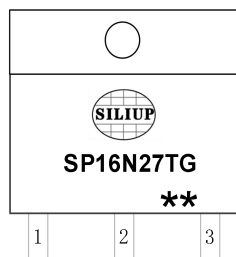


TO-220F(1:G 2:D 3:S)

Circuit diagram



Marking



SP16N27TG
**

:Device Code
:Week Code

Order Information

Device	Package	Unit/Tape
SP16N27TG	TO-220F	50

Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	270	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	16	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	I_D	10.2	A
Pulsed Drain Current	I_{DM}	64	A
Single Pulse Avalanche Energy ¹	E_{AS}	180	mJ
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	38	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	3.29	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$

Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	270	300	-	V
Drain-Source Leakage Current	IDSS	VDS=216V , VGS=0V , TJ=25℃	-	-	1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	2	3	4	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=10V , ID=8A	-	200	260	mΩ
Dynamic characteristics						
Input Capacitance	Ciss	VDS=25V , VGS=0V , f=1MHz	-	852	-	pF
Output Capacitance	Coss		-	137	-	
Reverse Transfer Capacitance	Crss		-	78	-	
Total Gate Charge	Qg	VDS=200V , VGS=10V , ID=16A	-	60	-	nC
Gate-Source Charge	Qgs		-	5	-	
Gate-Drain Charge	Qgd		-	35	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=125V , VGS=10V , RG=25Ω , ID=16A	-	36	-	nS
Rise Time	Tr		-	39	-	
Turn-Off Delay Time	Td(off)		-	149	-	
Fall Time	Tf		-	61	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	16	A
Reverse Recovery Time	Trr	IS=16A , di/dt=100A/us , TJ=25℃	-	208	-	nS
Reverse Recovery Charge	Qrr		-	2.0	-	uC

Note :

- The EAS test condition is $V_{DD}=50V$, $V_{GS}=10V$, $L=10mH$, $R_G=25\Omega$

Typical Characteristics

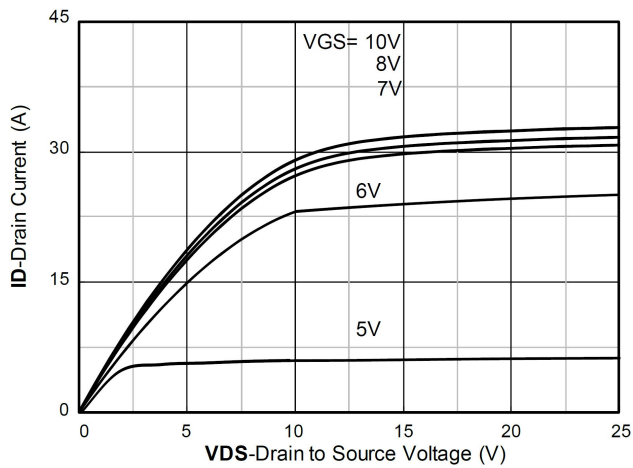
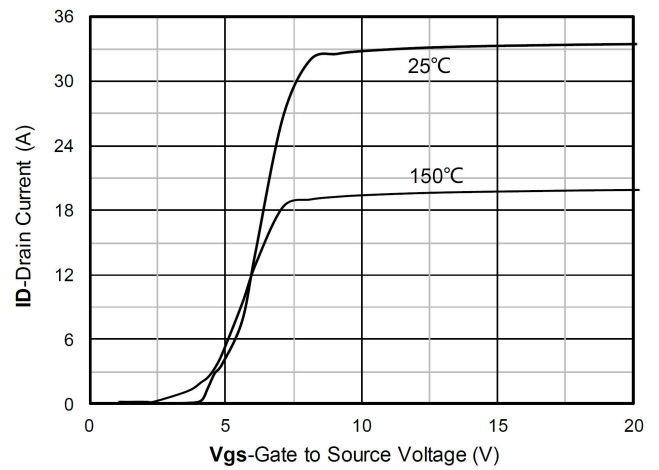
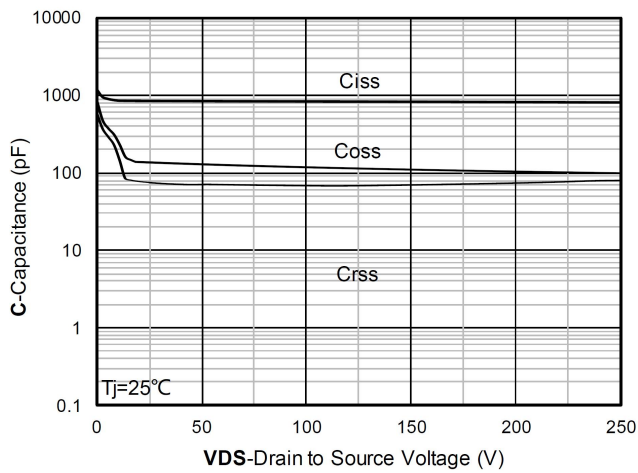


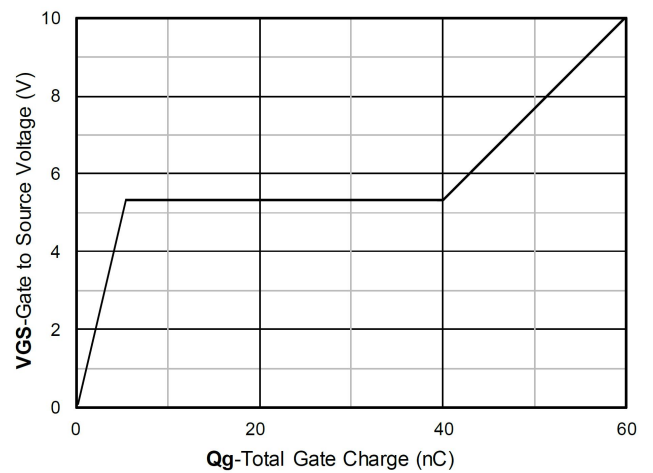
Figure 1. Output Characteristics



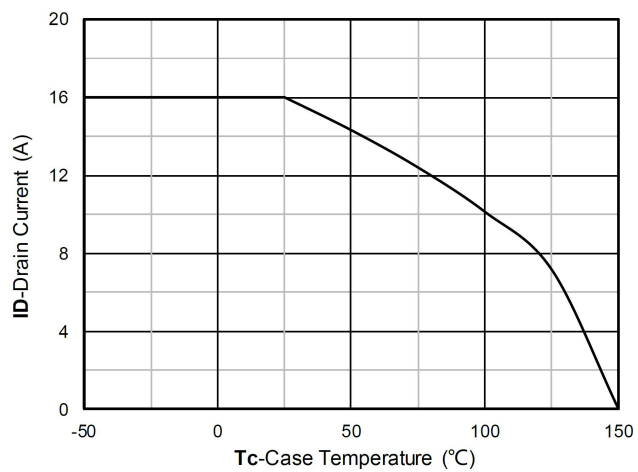
Transfer Characteristics



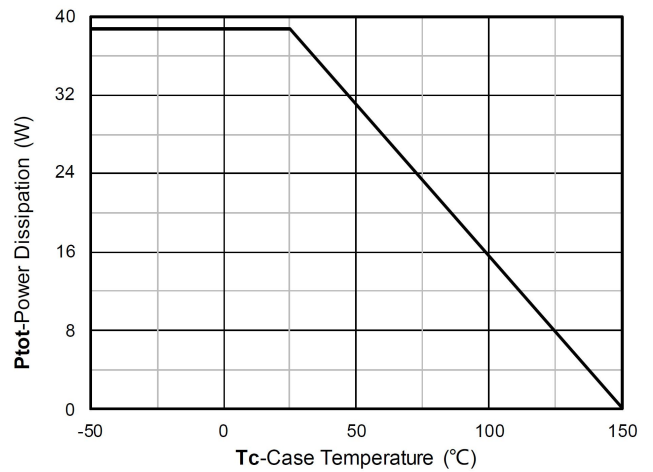
Capacitance Characteristics



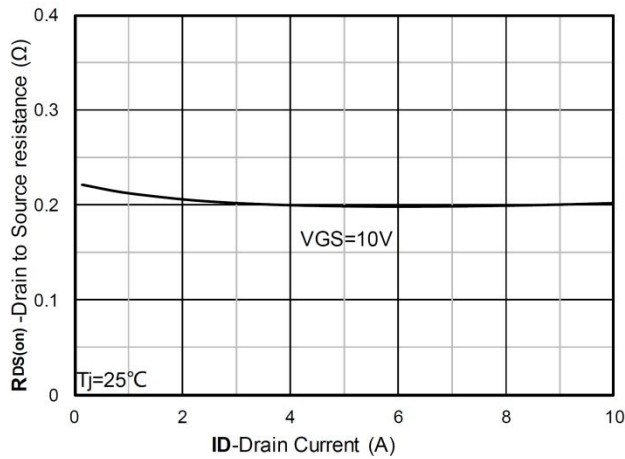
Gate Charge



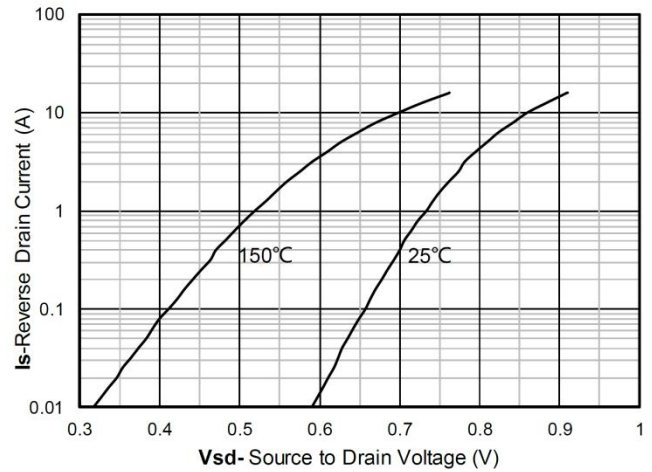
Current dissipation



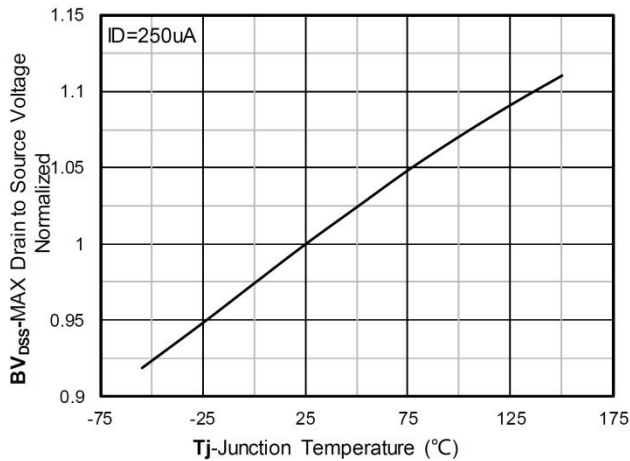
Power dissipation



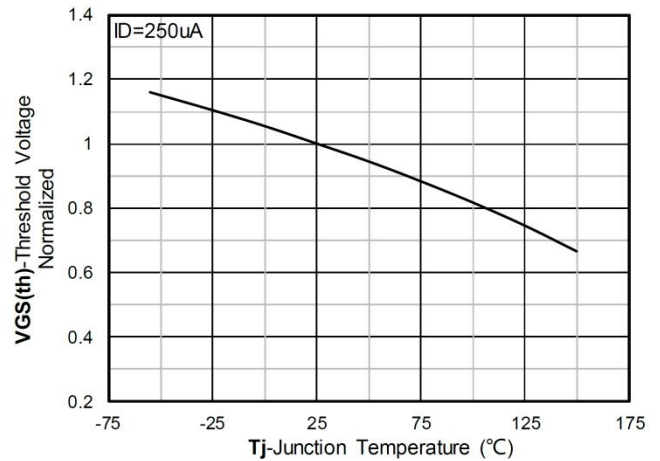
RDS(on) VS Drain Current



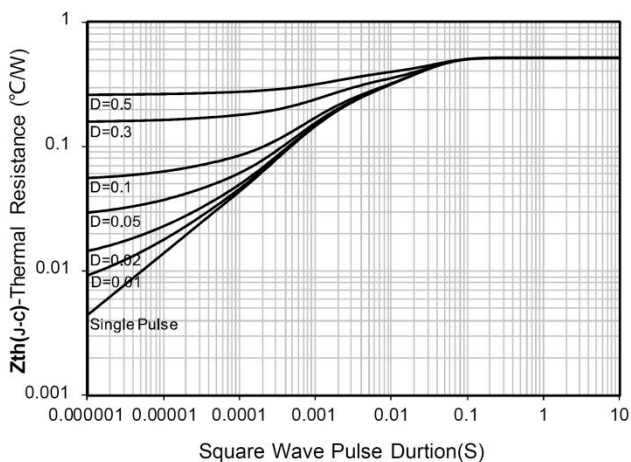
Forward characteristics of reverse diode



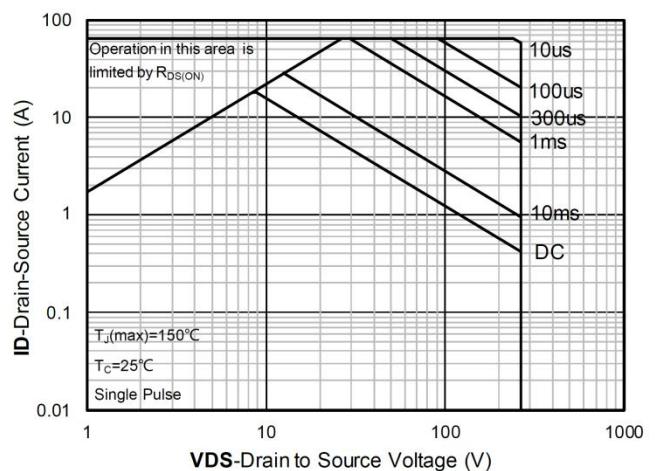
Normalized breakdown voltage



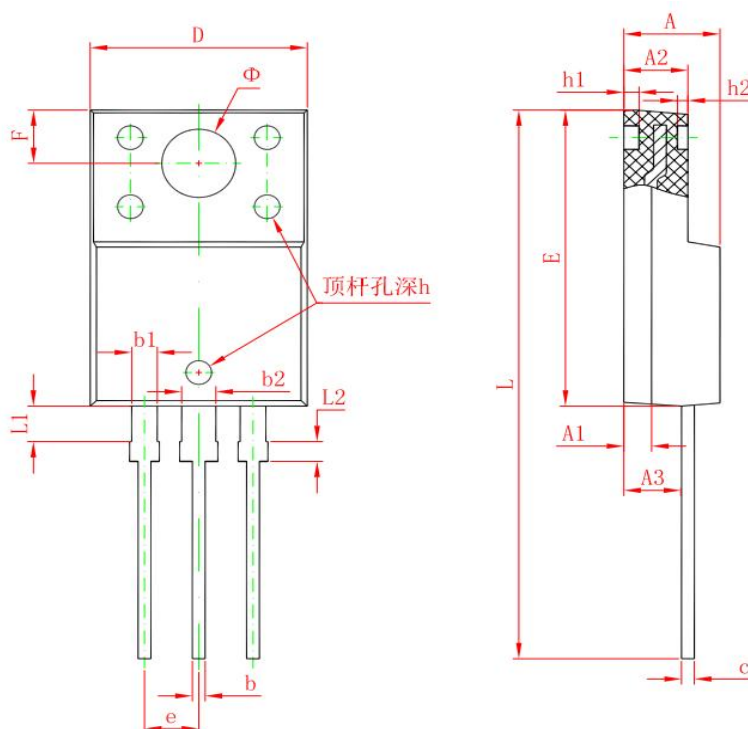
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation Area

TO-220F Package Information


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.300	4.700
A1	1.300 REF.	
A2	2.800	3.200
A3	2.500	2.900
b	0.500	0.750
b1	1.100	1.350
b2	1.500	1.750
c	0.500	0.750
D	9.960	10.360
E	14.800	15.200
e	2.540 TYP.	
F	2.700 REF.	
Φ	3.500 REF.	
h	0.000	0.300
h1	0.800 REF.	
h2	0.500 REF.	
L	28.000	28.400
L1	1.700	1.900
L2	0.900	1.100