Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
270V	70mΩ@10V	40A

合肥矽普半导体
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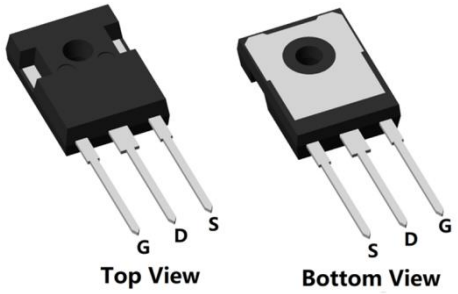
Feature

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

Applications

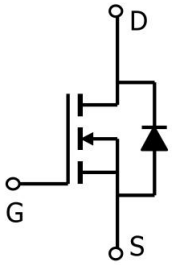
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

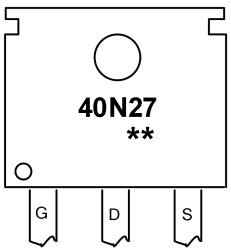


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



40N27 :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tube
SP40N27TF	TO-247	30

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	270	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	40	A
Continuous Drain Current (Tc=100℃)	I_D	26.7	A
Pulsed Drain Current	I_{DM}	160	A
Single Pulse Avalanche Energy[1]	E_{AS}	3380	mJ
Power Dissipation (Tc=25℃)	P_D	190	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.66	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

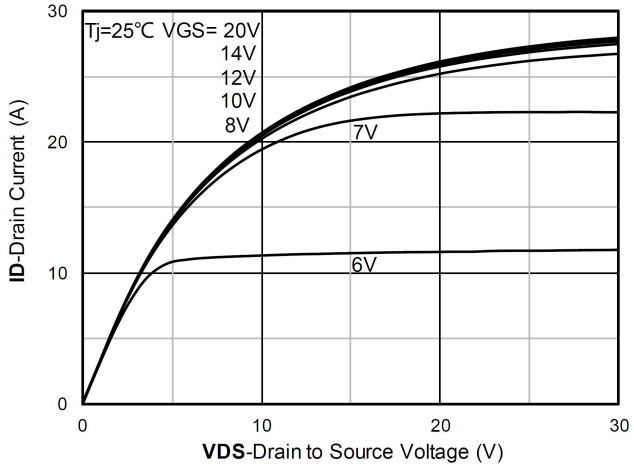
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	270	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS = 216V, VGS = 0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 22.5A	-	70	88	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS =25V, VGS = 0V, f = 1.0MHz	-	2516	-	pF
Output Capacitance	C_{oss}		-	338	-	
Reverse Transfer Capacitance	C_{rss}		-	23	-	
Total Gate Charge	Q_g	VDS=200V , VGS=10V , ID=40A	-	46	-	nC
Gate-Source Charge	Q_{gs}		-	17	-	
Gate-Drain Charge	Q_{gd}		-	20	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VGS = 125V, VDS =10V, RG=10Ω, ID=40A	-	31	-	nS
Rise Time	t_r		-	152	-	
Turn-Off Delay Time	$t_{d(off)}$		-	49	-	
Fall Time	t_f		-	20	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	40	A
Body Diode Reverse Recovery Time	Trr	I_S = 40A, dI_F/dt = 100A/us	-	215	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	1650	-	nC

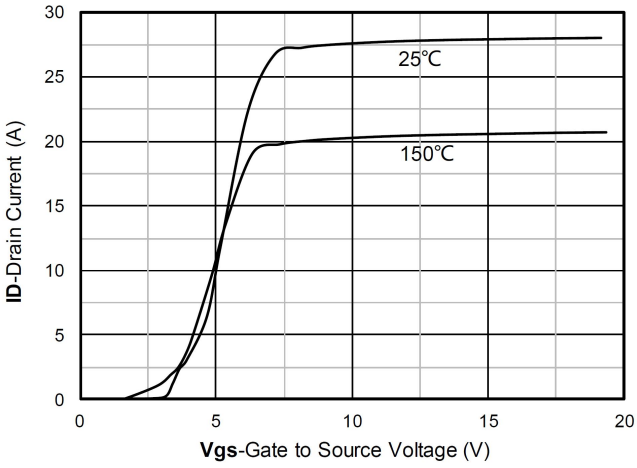
Note :

1. The test condition is VDD=50V,VGS=10V,L=10mH,RG=30Ω;

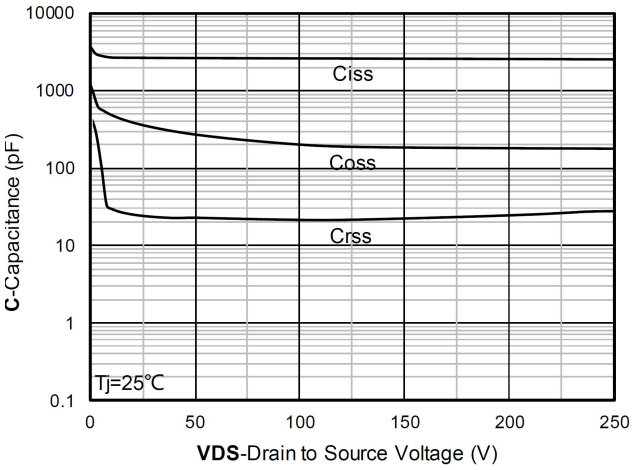
Typical Characteristics



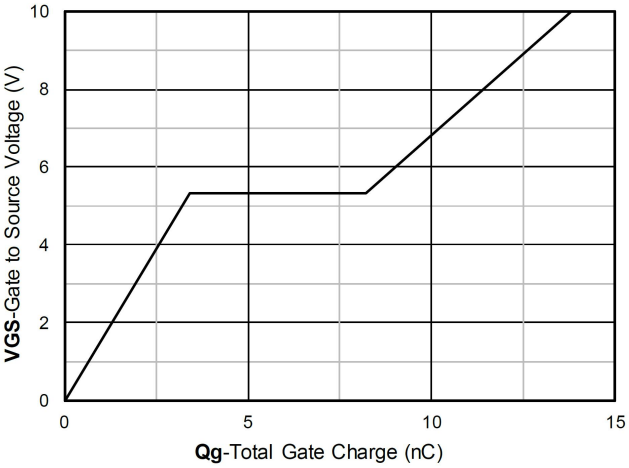
Output Characteristics



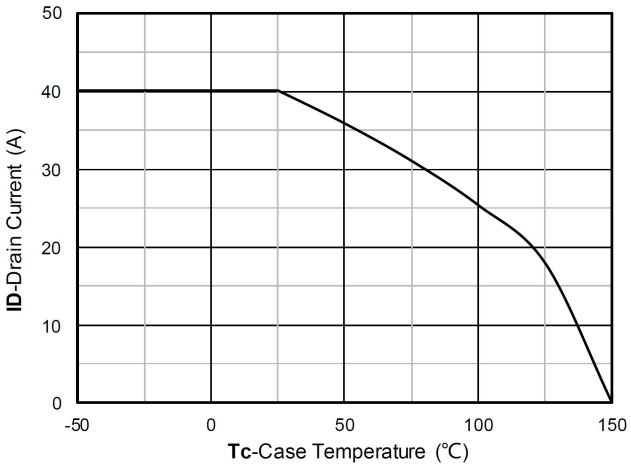
Transfer Characteristics



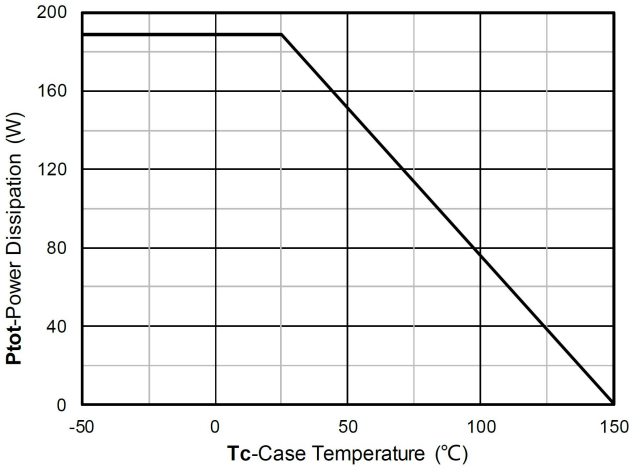
Capacitance Characteristics



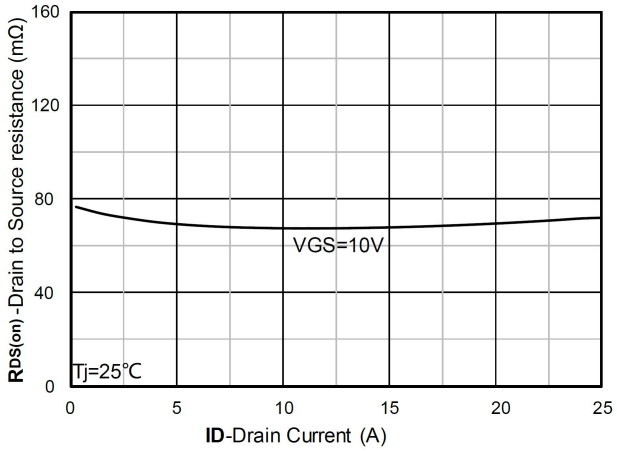
Gate Charge



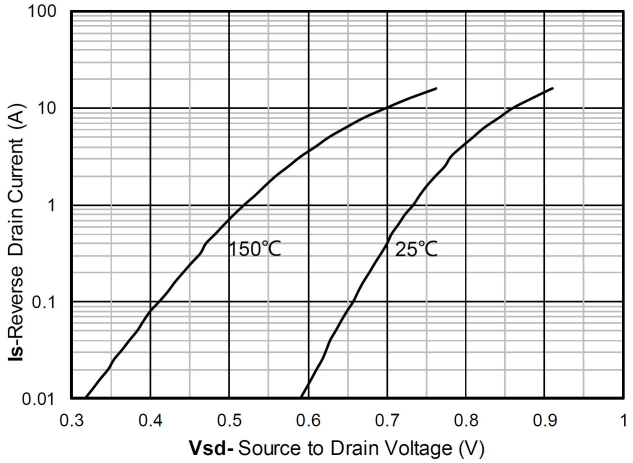
Current dissipation



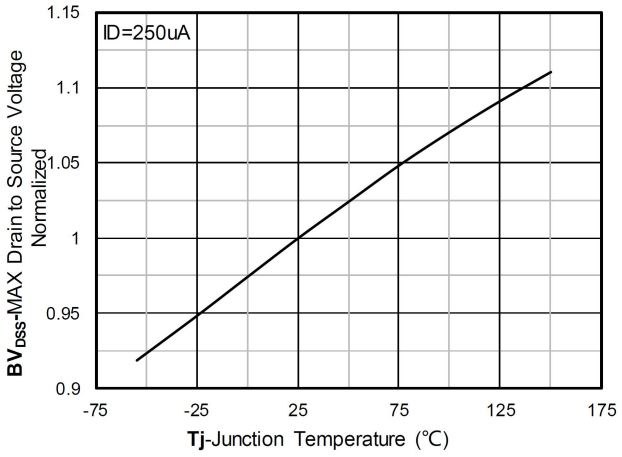
Power dissipation



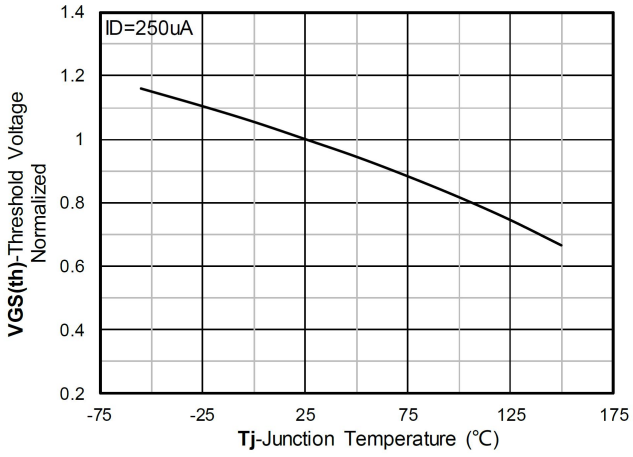
RDS(on) VS Drain Current



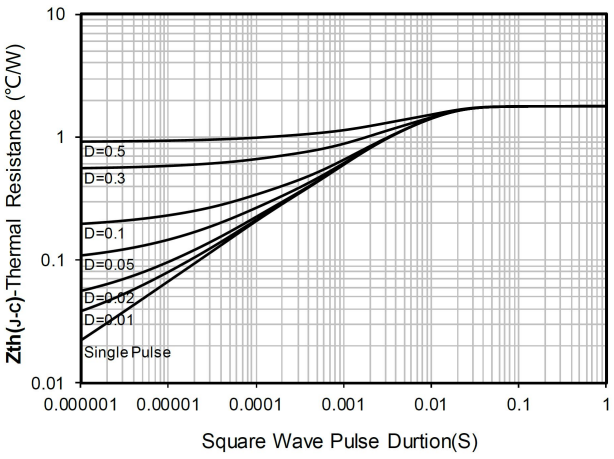
Forward characteristics of reverse diode



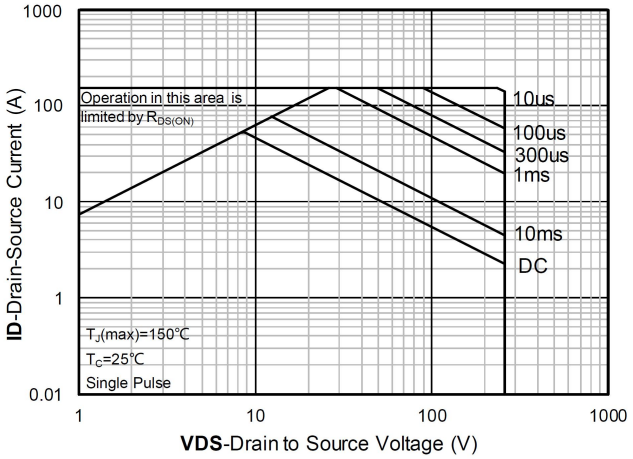
Normalized breakdown voltage



Normalized Threshold voltage

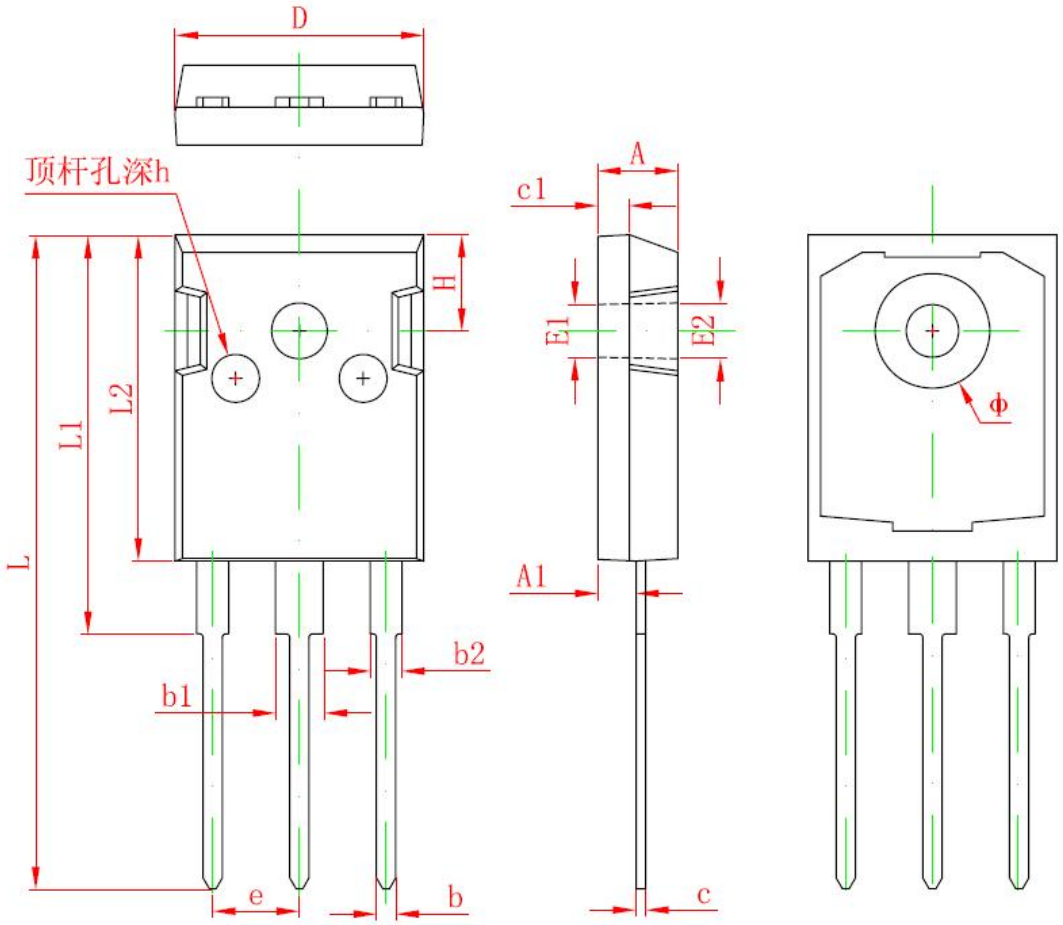


Maximum Transient Thermal Impedance



Safe Operation Area

TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b2	1.800	2.200	0.071	0.087
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H1	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012