

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	45mΩ@10V	15A
	60mΩ@4.5V	



合肥矽普半导体

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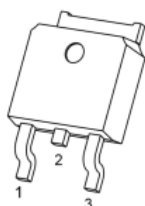
Feature

- Green Device Available
- Low Gate Charge
- Advanced High Cell Density Trench Technology
- 100% EAS Guaranteed

Application

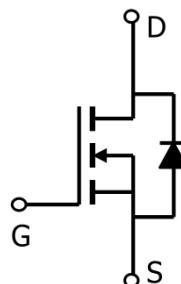
- Power Management Switches
- DC/DC Converters

Package

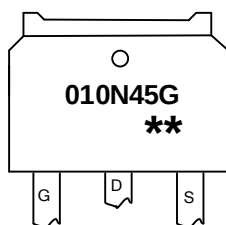


TO-252(G:1 D:2 S:3)

Circuit diagram



Marking



010N45G : Product code
** : Week code.

Order Information

Device	Package	Unite/Tape
SP010N45GTH	TO-252-3L	2500

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current@10V	I_D	15	A
Pulsed Drain Current	I_{DM}	60	A
Single Pulse Avalanche Energy ¹	E_{AS}	9.8	mJ
Total Power Dissipation	P_D	42	W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	2.97	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

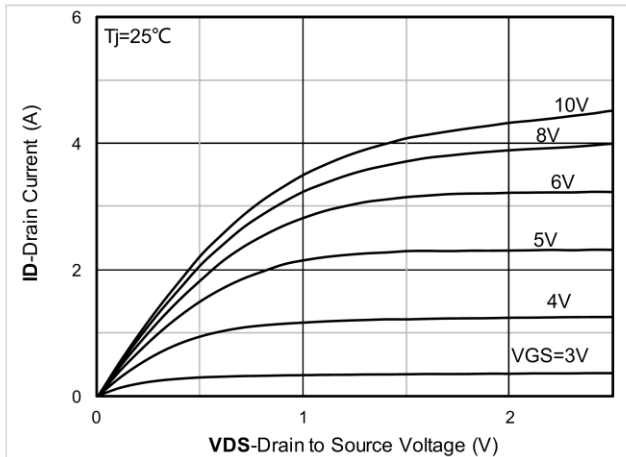
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V ID=250μA	100	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=100V,VGS=0V	-	-	1	μA
Gate-Body Leakage Current	IGSS	VGS=±20V,VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS,ID=250μA	1.0	1.7	2.5	V
Drain-Source On-State Resistance	RDS(on)	VGS=10V, ID=12A	-	45	56	mΩ
		VGS=4.5V, ID=10A	-	60	80	
Dynamic Characteristics						
Input Capacitance	Ciss	VDS = 25V, VGS =0V, f =1MHz	-	392	-	PF
Output Capacitance	Coss		-	94	-	
Reverse Transfer Capacitance	Crss		-	3.4	-	
Switching Characteristics						
Turn-on Delay Time	td(on)	VGS =10V, VDD =50V, RG = 2.5Ω, ID= 20A	-	9	-	nS
Turn-on Rise Time	tr		-	18	-	
Turn-Off Delay Time	td(off)		-	31	-	
Turn-Off Fall Time	tf		-	23	-	
Total Gate Charge	Qg	VGS = 10V,VDS = 50V, ID=20A	-	41.4		nC
Gate-Source Charge	Qgs		-	9.1	-	
Gate-Drain Charge	Qgd		-	11.2	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V,IS=1A	-	-	1.2	V

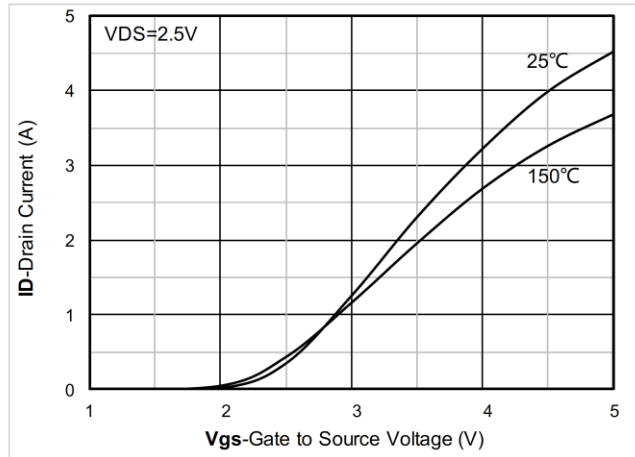
Notes:

1. EAS condition: $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=14A$

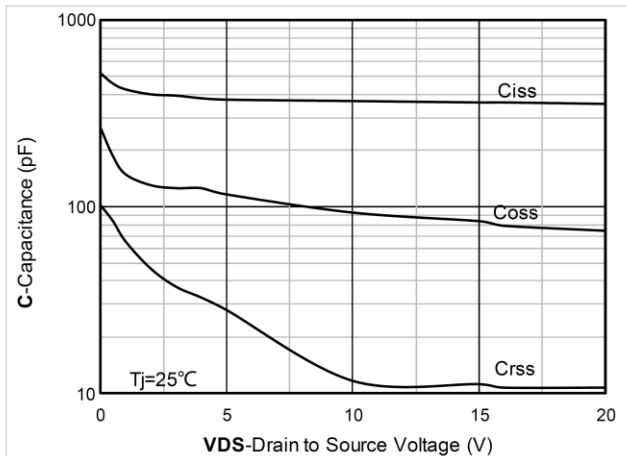
Typical Characteristics



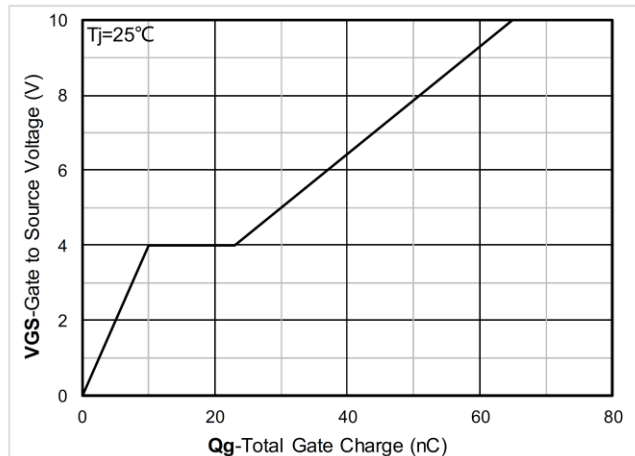
Output Characteristics



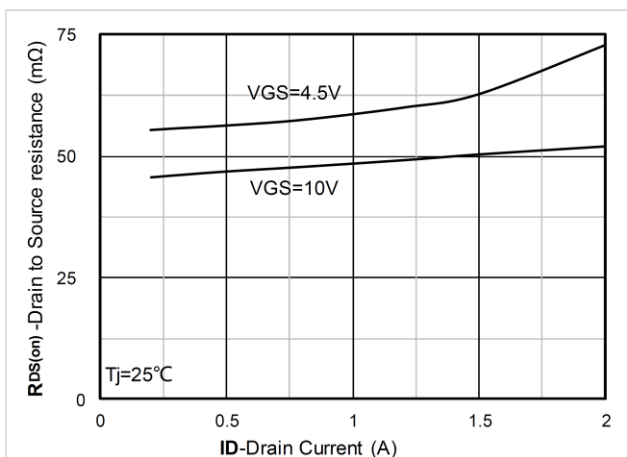
Transfer Characteristics



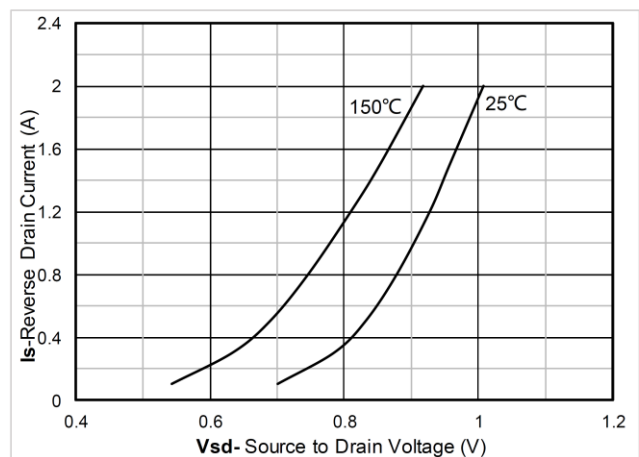
Capacitance Characteristics



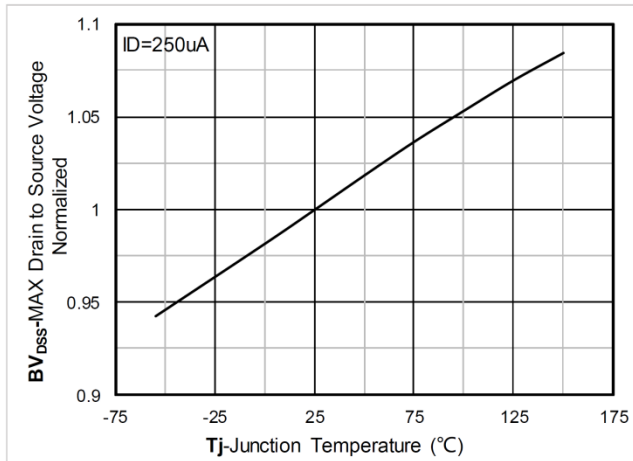
Gate Charge



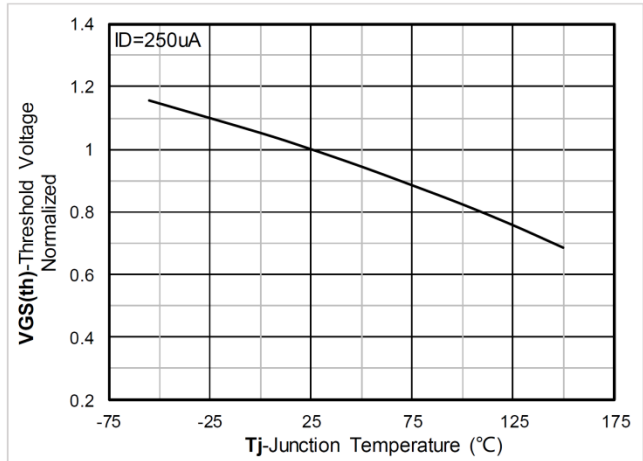
RDS(on) VS Drain Current



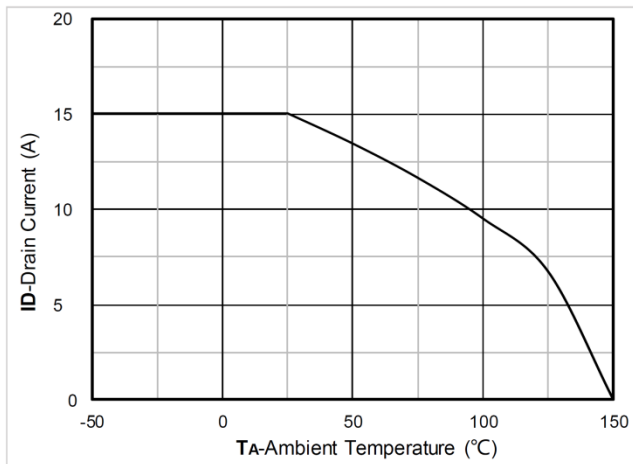
Forward characteristics of reverse diode



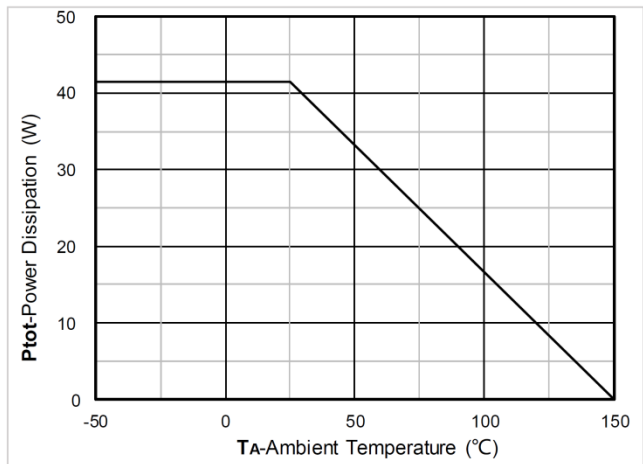
Normalized breakdown voltage



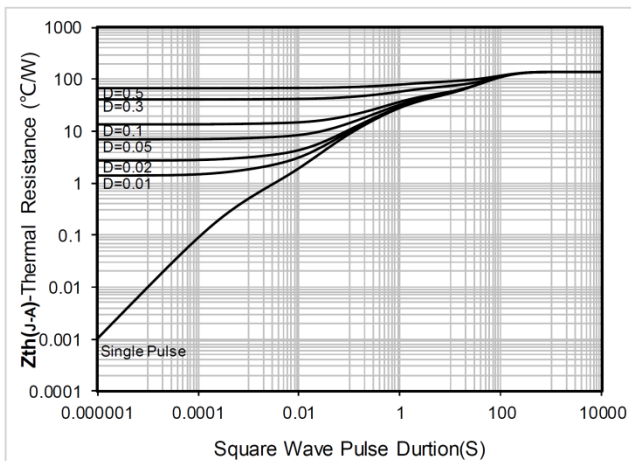
Normalized Threshold voltage



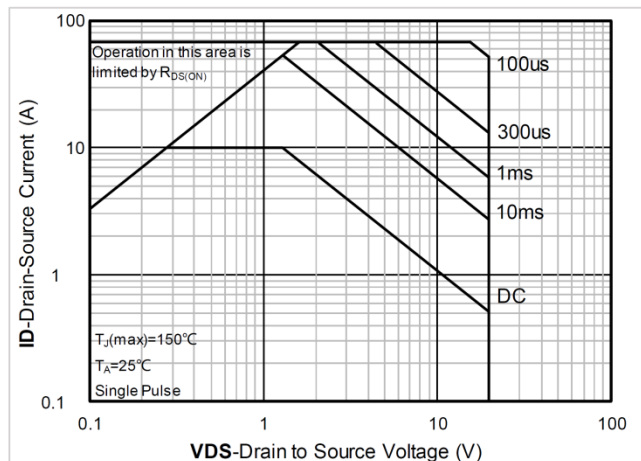
Current dissipation



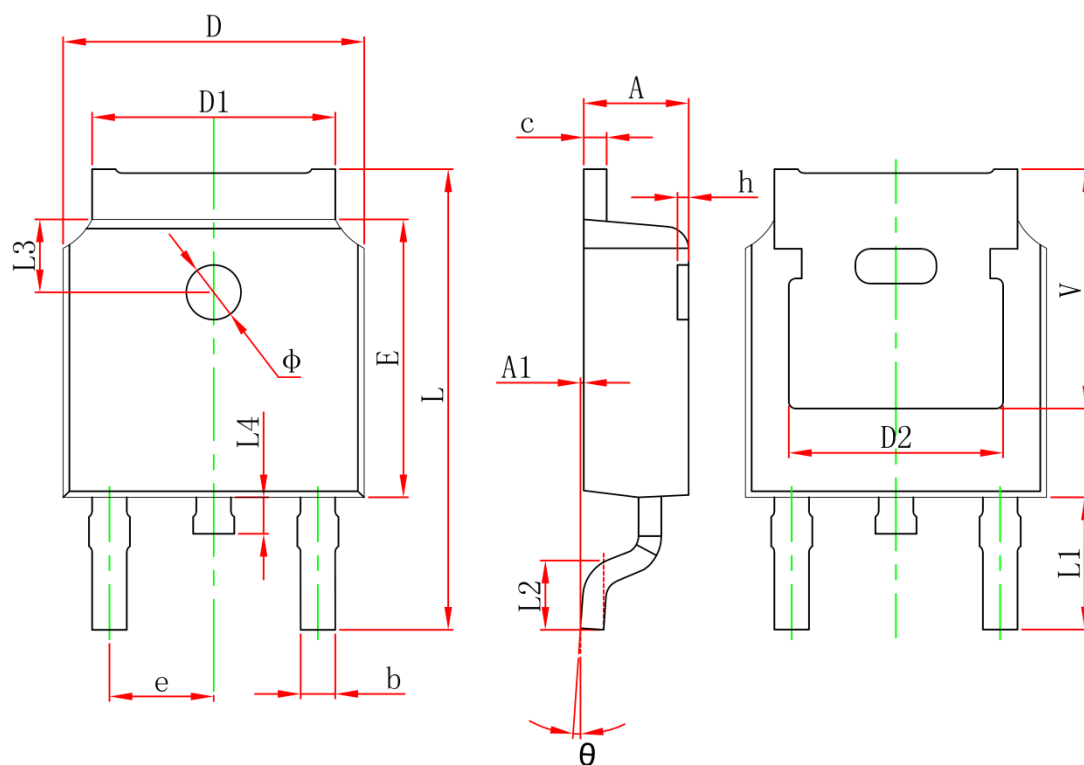
Power dissipation



Maximum Transient Thermal Impedance



Safe Operation Area

TO-252 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	