

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.5mΩ@10V	145A
	3.0mΩ@4.5V	



合肥矽普半导体

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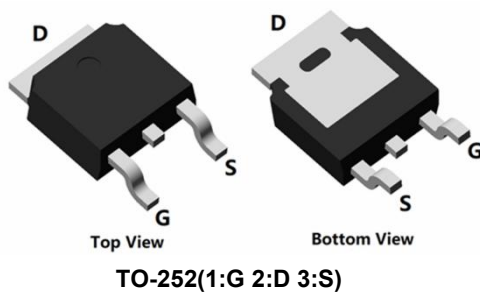
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

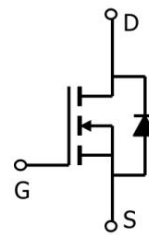
Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

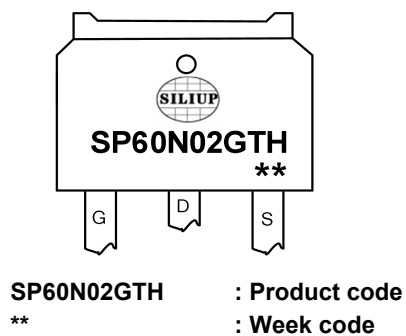
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP60N02GTH	TO-252	2500

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

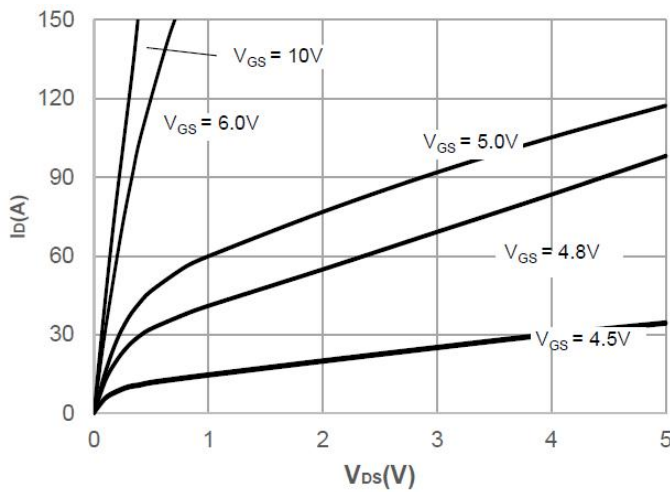
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DSS}	60	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Tc=25°C)	I _D	145	A
Continuous Drain Current (Tc=100°C)	I _D	97	A
Pulse Drain Current Tested	I _{DM}	580	A
Single Pulse Avalanche Energy ¹	E _{AS}	487	mJ
Power Dissipation (Tc=25°C)	P _D	115	W
Thermal Resistance Junction-to-Case	R _{θJC}	1.09	°C/W
Maximum Junction Temperature	T _J	-55 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

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

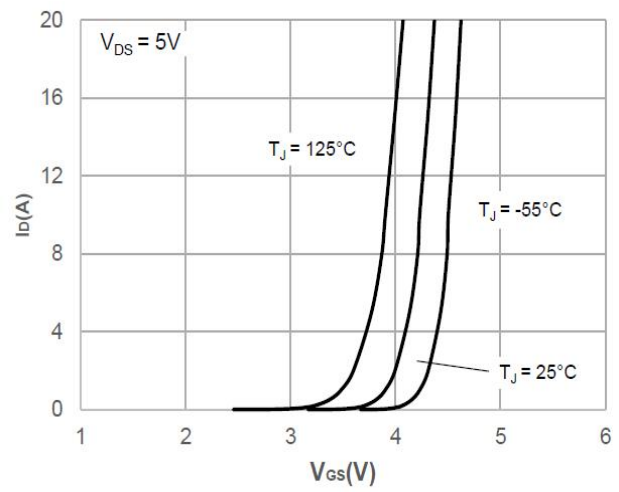
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V, ID=250mA	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=48V, VGS=0V	-	-	1	uA
Gate Leakage Current	I _{GSS}	VGS=±20V, VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VDS=VGS, ID=250uA	1.2	1.7	2.2	V
Drain-Source On-state Resistance	R _{DS(ON)}	VGS=10V, ID=30A	-	2.5	3.2	mΩ
		VGS=4.5V, ID=20A	-	3.0	4.0	
Dynamic Characteristics						
Input Capacitance	C _{iss}	VGS=0V, VDS=30V, F=1MHz	-	5400	-	pF
Output Capacitance	C _{oss}		-	1738	-	
Reverse Transfer Capacitance	C _{rss}		-	49	-	
Total Gate Charge	Q _g	VDS=30V, VGS=10V, ID=30A	-	87	-	nC
Gate-Source Charge	Q _{gs}		-	13.7	-	
Gate-Drain Charge	Q _{gd}		-	18	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	VDD=30V, ID=30A, VGS=10V, R _G =3Ω	-	13.5	-	nS
Rise Time	t _r		-	25	-	
Turn-Off Delay Time	t _{d(off)}		-	33	-	
Fall Time	t _f		-	14.8	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	VGS=0V , IS=1A , T _J =25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I _S		-	-	145	A
Reverse Recovery Time	T _{rr}	I _S =30 A, di/dt=100 A/μs, T _J =25℃	-	54	-	nS
Reverse Recovery Charge	Q _{rr}		-	61	-	nC

Note :

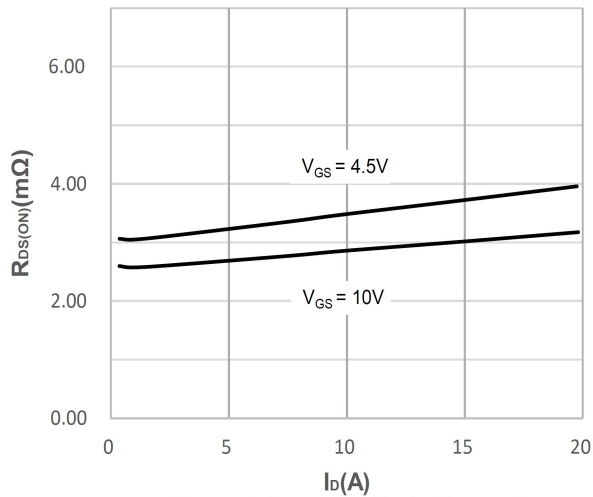
The test condition is VDD=30V, VGS=10V, L=0.3mH, RG=25Ω

**Typical Characteristics**

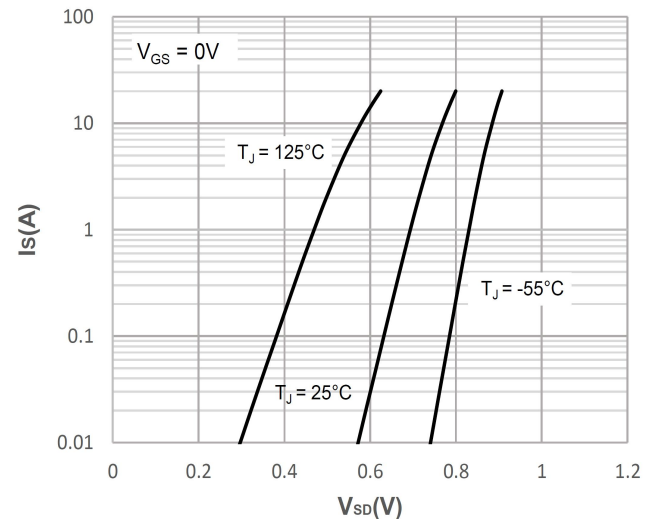
Output Characteristics



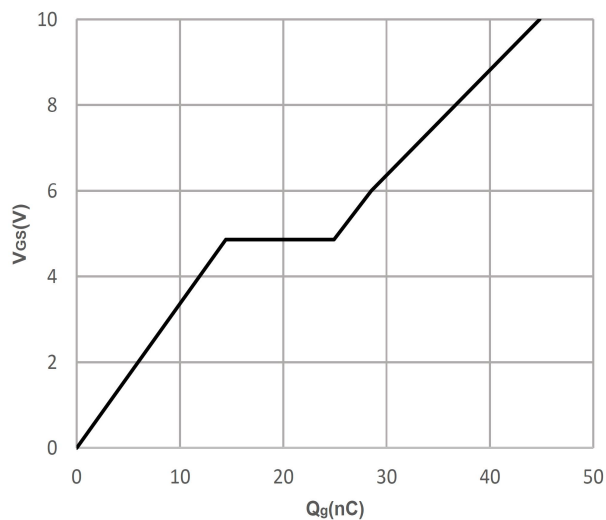
Typical Transfer Characteristics



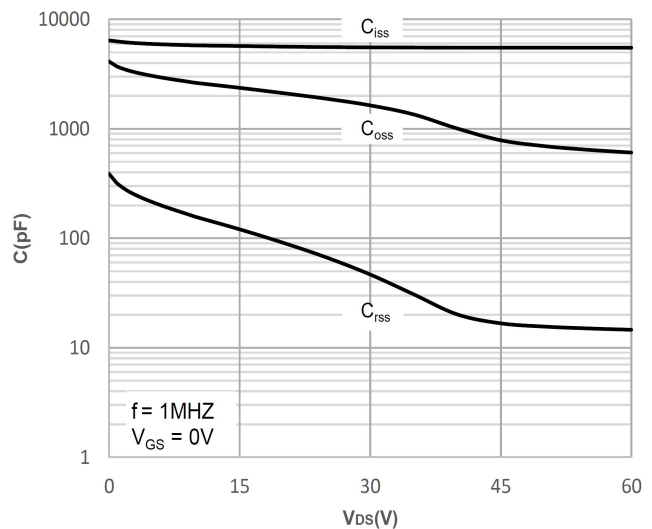
On-resistance vs. Drain Current



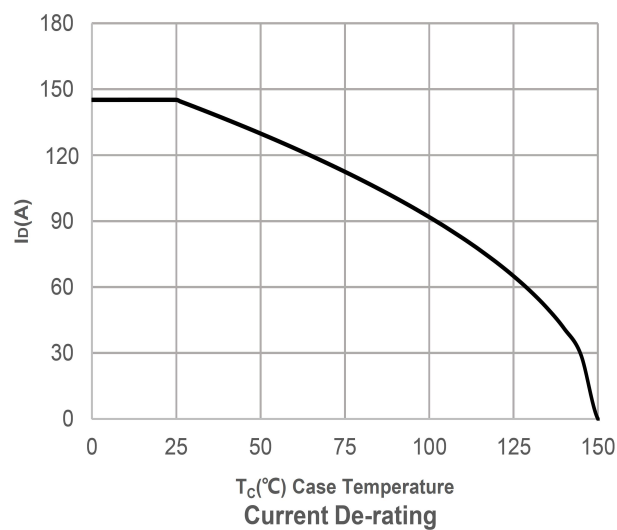
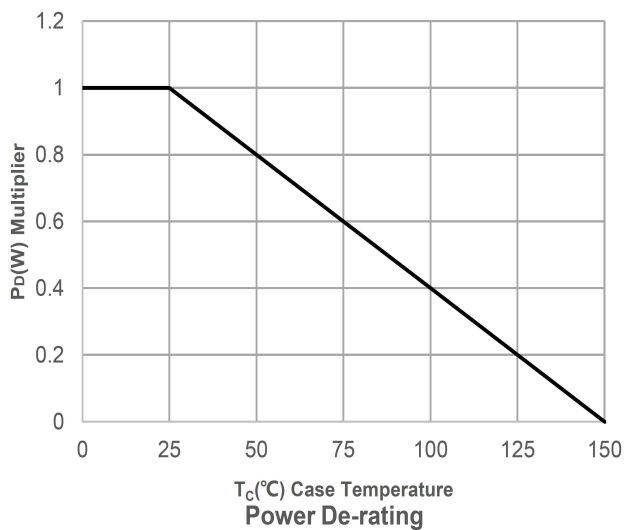
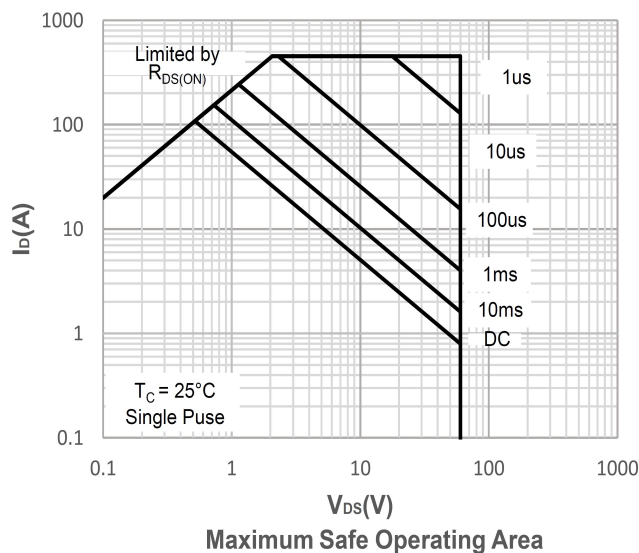
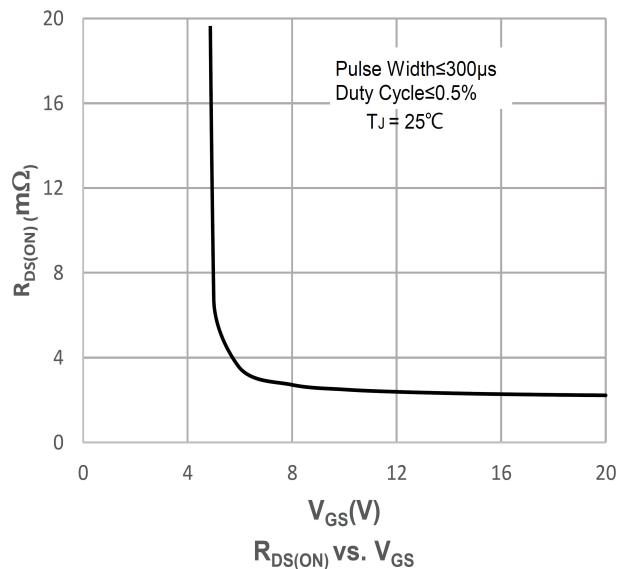
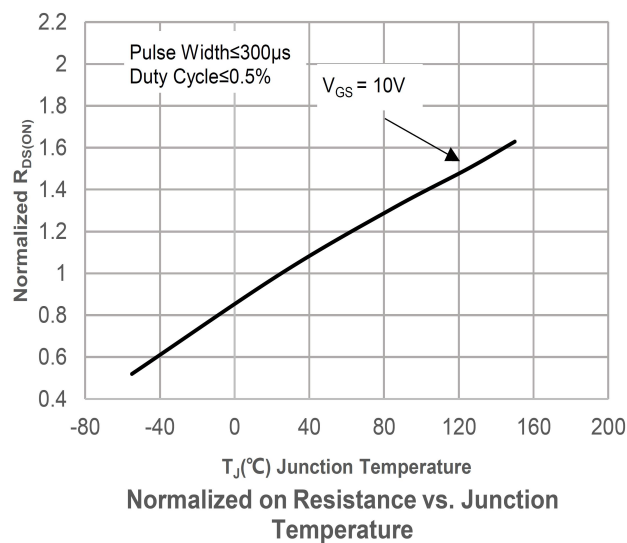
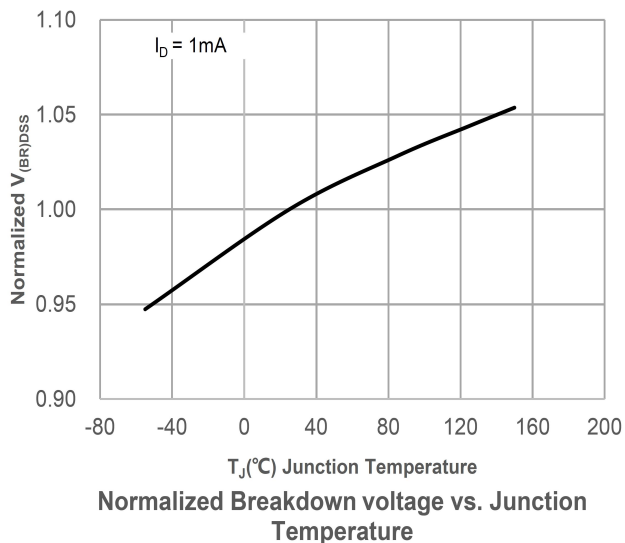
Body Diode Characteristics

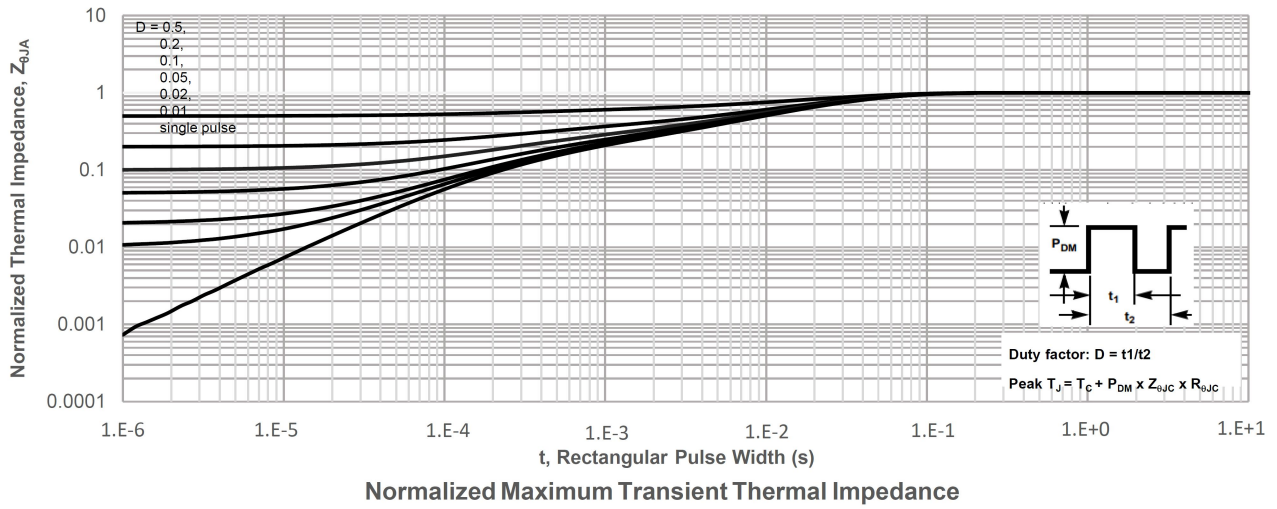


Gate Charge Characteristics

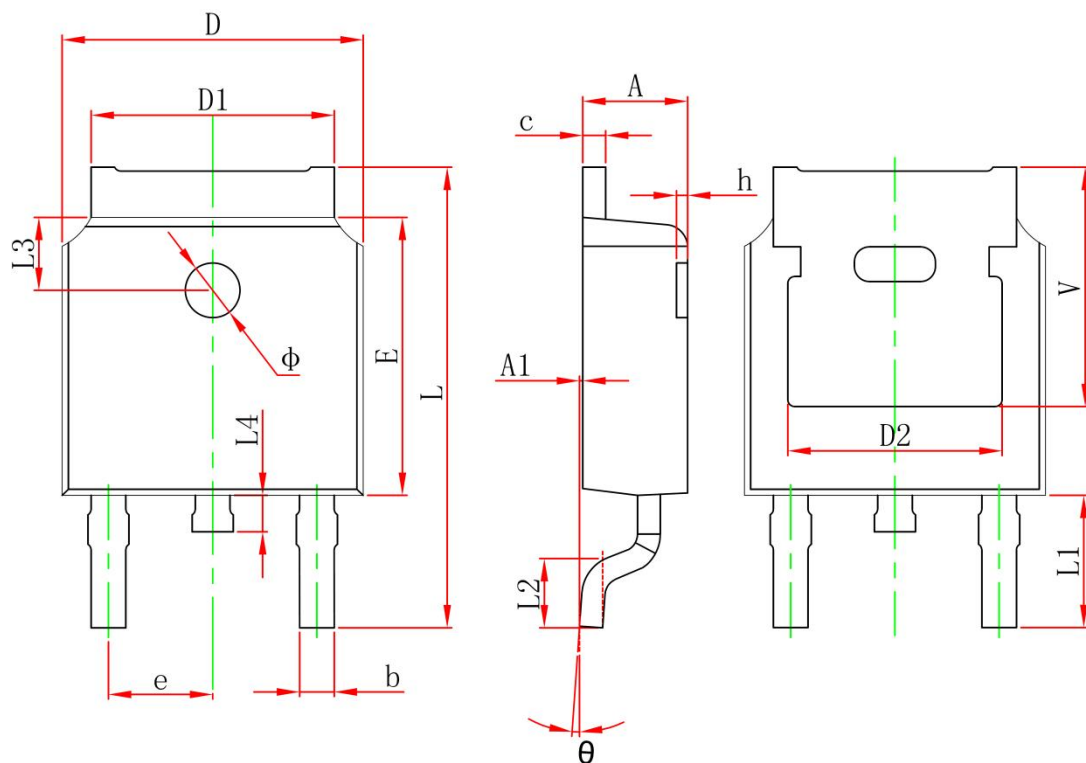


Capacitance Characteristics





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.	