

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	12mΩ@10V	30A
	15mΩ@4.5V	



合肥矽普半导体

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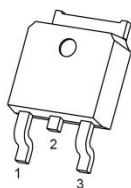
Feature

- Fast Switching
- Extremely low switching loss
- Excellent Rdson and Low Gate Charge

Application

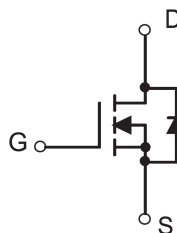
- Power Management
- Switched mode power supply

Package

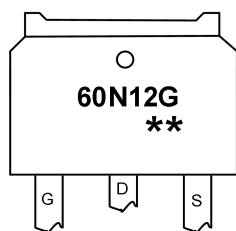


TO-252-2L(G:1 D:2 S:3)

Circuit diagram



Marking



60N12G
**

=Device Code
=Week Code

Order Information

Device	Package	Unite/Tape
SP60N12GTH	TO-252	2500

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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current ¹⁾ , TC=25 °C	I_D	30	A
Pulsed drain current ²⁾ , TC=25 °C	I_{DM}	120	A
Continuous diode forward current ¹⁾ , TC=25 °C	I_S	12	A
Power dissipation ³⁾ , TC=25 °C	P_D	60	W
Single pulsed avalanche energy ⁴⁾	E_{AS}	36	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	2.5	°C/W
Operation and storage temperature	T_{stg}, T_J	-55 to 150	°C

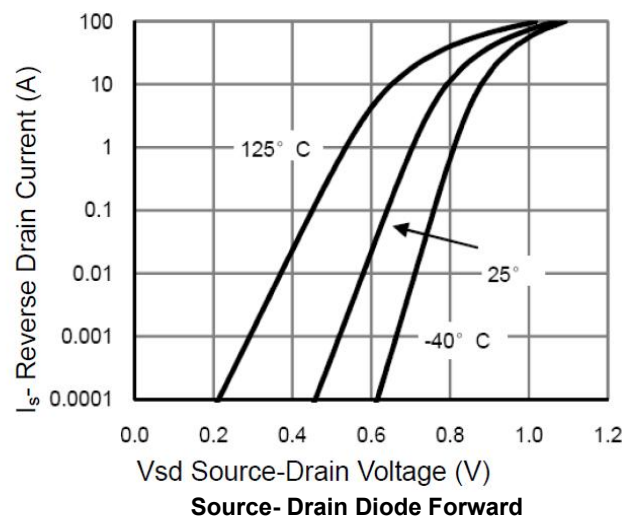
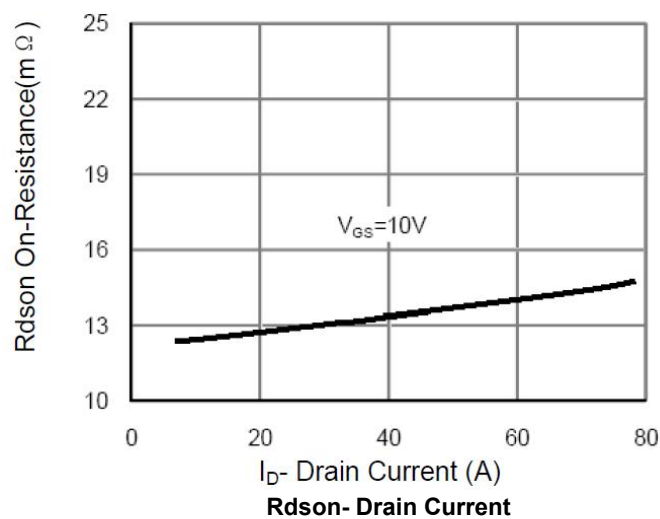
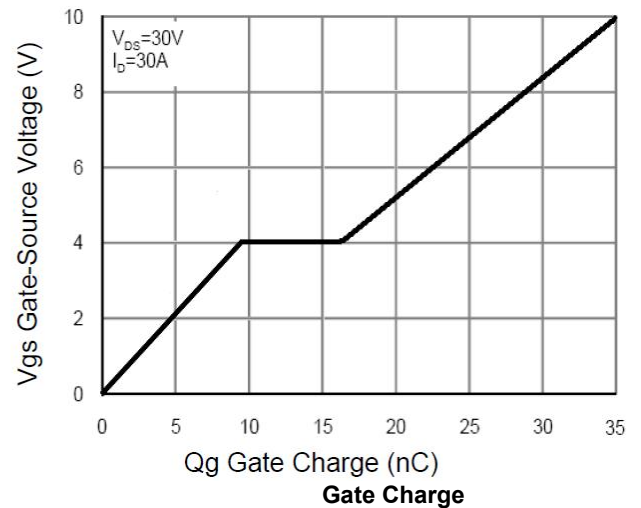
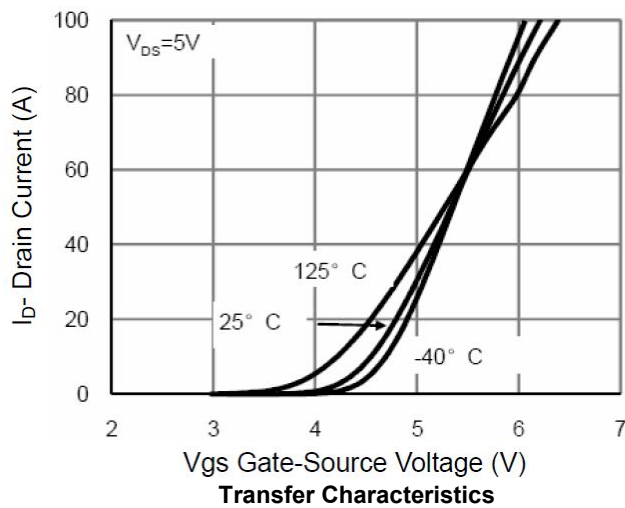
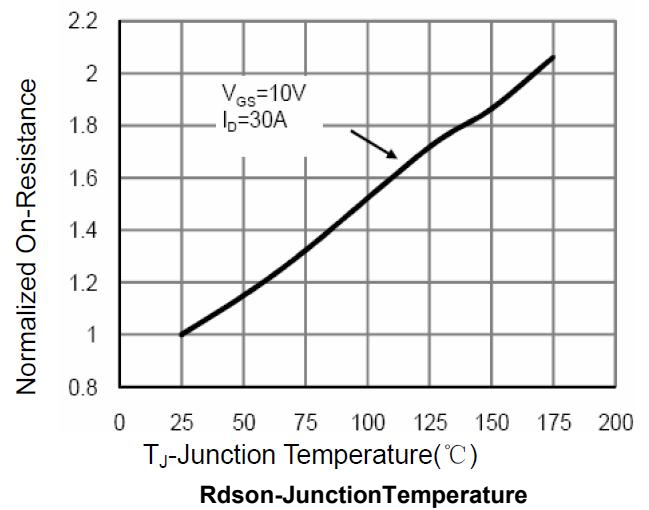
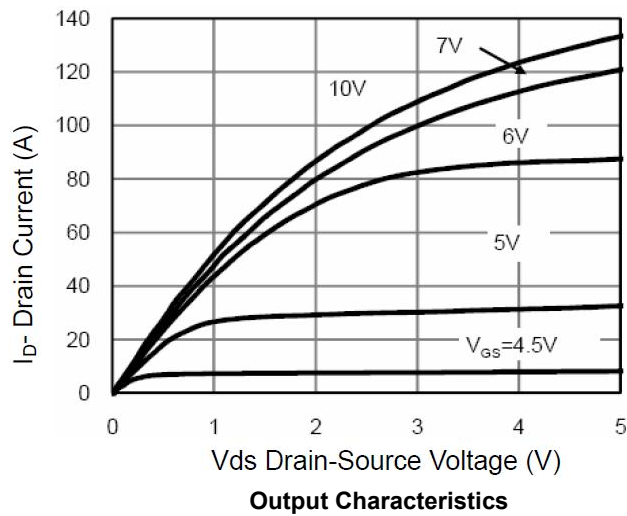
Electrical characteristics (Ta=25 °C, unless otherwise noted)

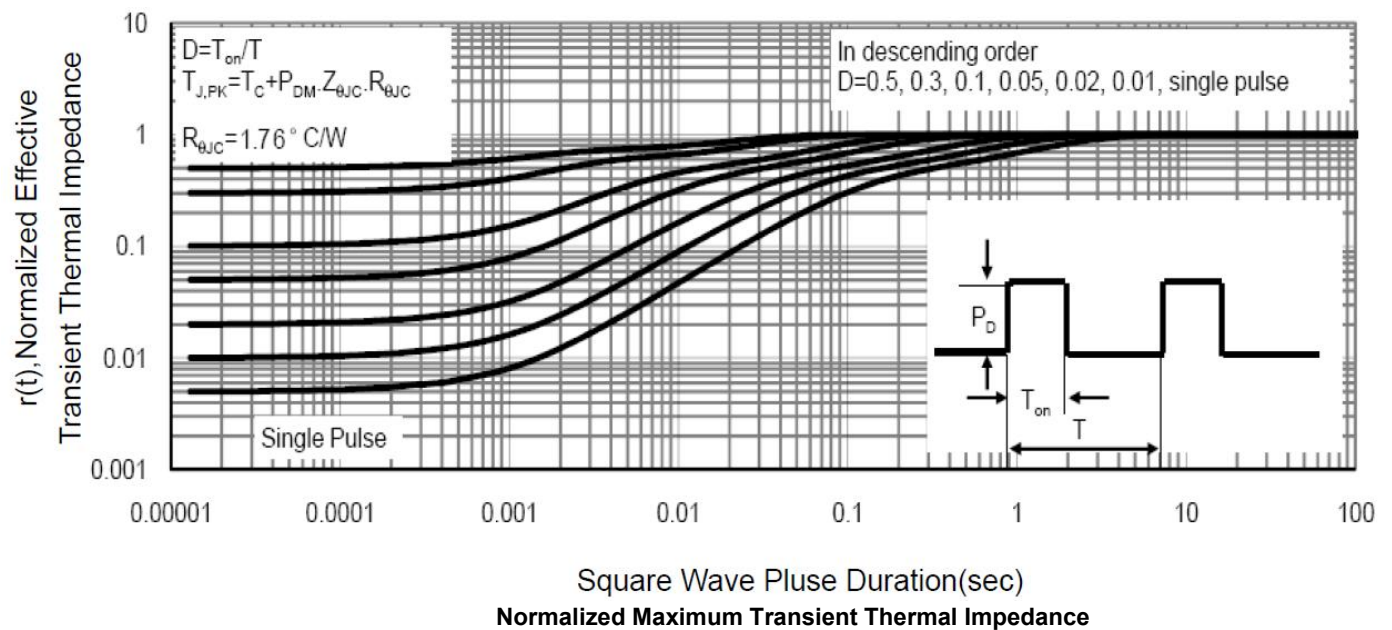
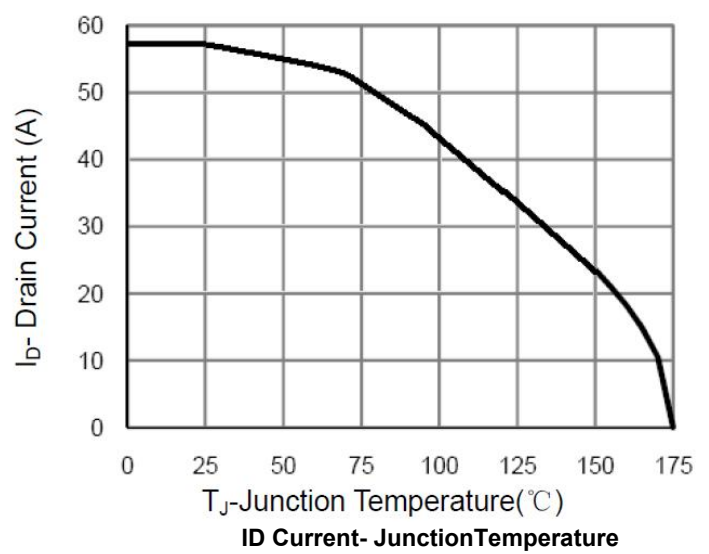
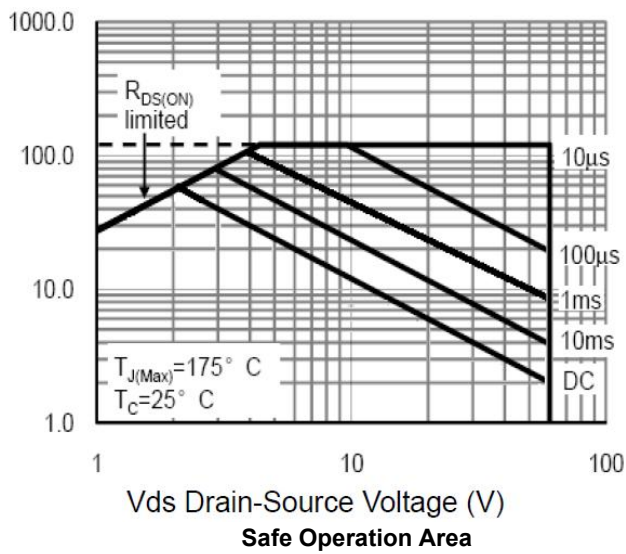
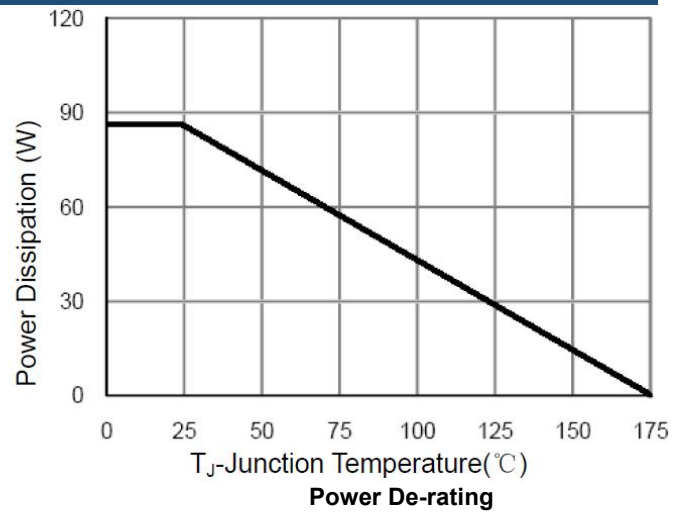
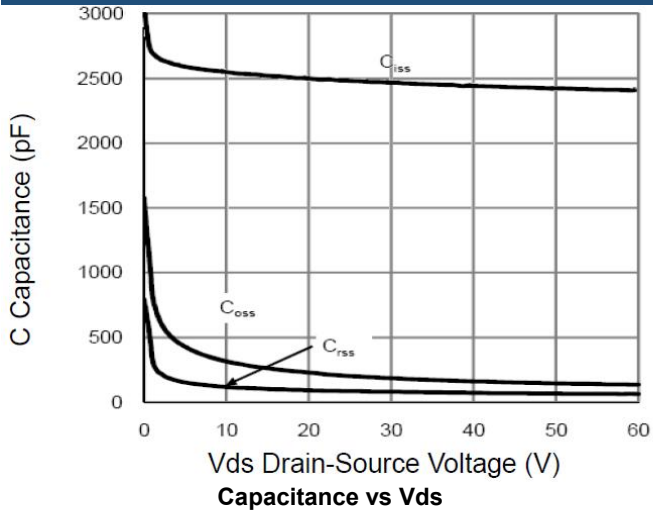
Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	VGS=0 V, ID=250 μA	60			V
Gate-source leakage current	IGSS	VGS=±20 V			±100	nA
Drain-source leakage current	IDSS	VDS=48 V, VGS=0 V			1	μA
Gate threshold voltage	VGS(th)	VDS=VGS, ID=250 μA	1	1.6	2.5	V
Drain-source on-state resistance	RDS(ON)	VGS=10 V, ID=20 A		12	16	mΩ
		VGS=4.5V, ID=10 A		15	22	
Dynamic Characteristics						
Input capacitance	Ciss	VGS=0 V, VDS=25V, f=1MHz		940		pF
Output capacitance	Coss			235		
Reverse transfer capacitance	Crss			10		
Total gate charge	Qg	VGS=10 V, VDS=30 V, ID=20 A		23		nC
Gate-source charge	Qgs			4.8		
Gate-drain charge	Qgd			4.0		
Switching Characteristics						
Turn-on delay time	td(on)	VGS=10 V, VDS=30 V, RG=1.6 Ω, ID=20 A		4.7		ns
Rise time	tr			2.9		
Turn-off delay time	td(off)			14		
Fall time	tf			2.9		
Body Diode Characteristics						
Diode forward voltage	VSD	IS=1 A, VGS=0 V			1.2	V

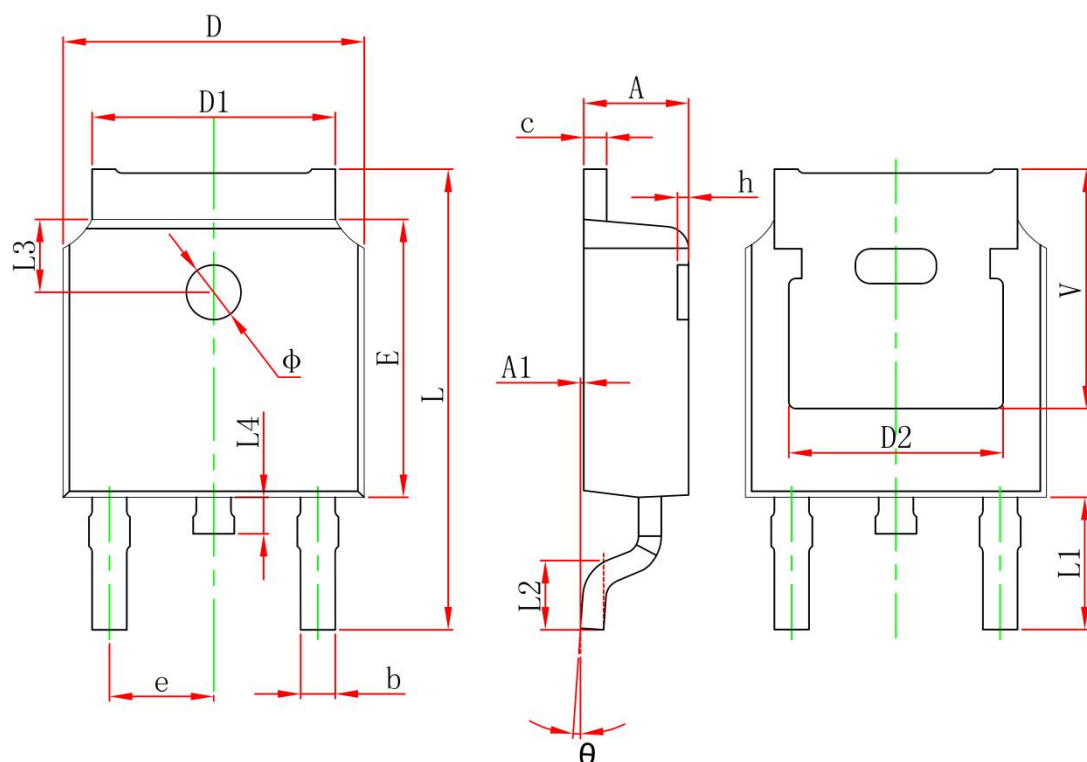
Note:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_D is based on max. junction temperature, using junction-case thermal resistance.
4. $V_{DD}=30\text{ V}, V_{GS}=10\text{ V}, L=0.5\text{ mH}$, starting $T_J=25\text{ }^\circ\text{C}$.

Typical 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.	