

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	2.1m Ω @10V	155A
	2.9m Ω @4.5V	



合肥矽普半导体

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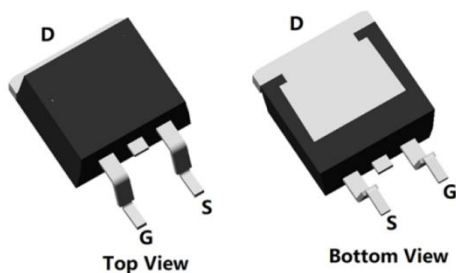
Feature

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

Applications

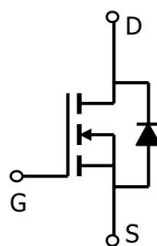
- DC-DC Converters
- Motor Control
- Portable equipment application

Package

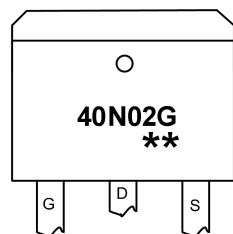


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



40N02G
**

: Device Code
: Week Code

Order Information

Device	Package	Unit/Tape
SP40N02GTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	155	A
Continuous Drain Current (Tc=100°C)	I_D	100	A
Pulse Drain Current Tested	I_{DM}	620	A
Single pulsed avalanche energy ¹	E_{AS}	484	mJ
Power Dissipation (Tc=25°C)	P_D	130	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.96	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

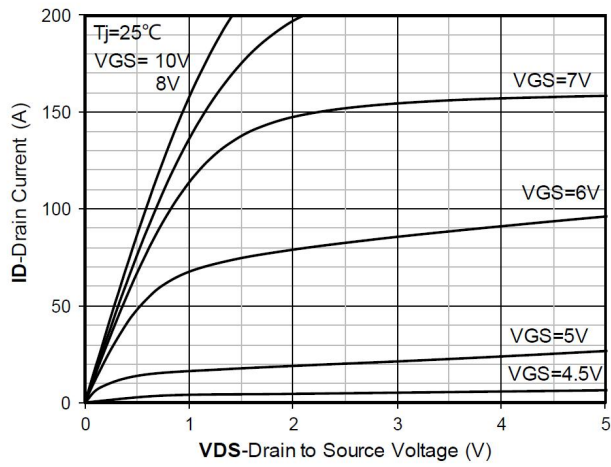
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	40	-	-	V
Drain-Source Leakage Current	Idss	VDS=32V , 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	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS =10V, ID =30A	-	2.1	2.65	mΩ
		VGS =4.5V, ID =20A	-	2.9	3.9	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=20V , VGS=0V , f=1MHz	-	3200	-	pF
Output Capacitance	Coss		-	1880	-	
Reverse Transfer Capacitance	Crss		-	65	-	
Total Gate Charge	Qg	VDS=20V , VGS=10V , ID=30A	-	54	-	nC
Gate-Source Charge	Qgs		-	9.5	-	
Gate-Drain Charge	Qgd		-	11	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=20 VGS=10V , RG=1.6Ω, ID=65A	-	9.5	-	nS
Rise Time	Tr		-	3	-	
Turn-Off Delay Time	Td(off)		-	33	-	
Fall Time	Tf		-	4	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Diode Continuous Current	IS		-	-	155	A
Reverse recover time	Trr	Is=55A, di/dt=100A/us, Tj=25℃	-	58	-	nS
Reverse recovery charge	Qrr		-	52	-	nC

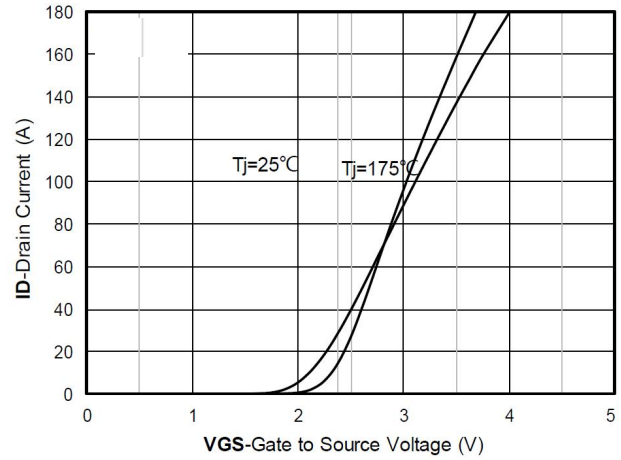
Note:

- The EAS Test condition is $V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$

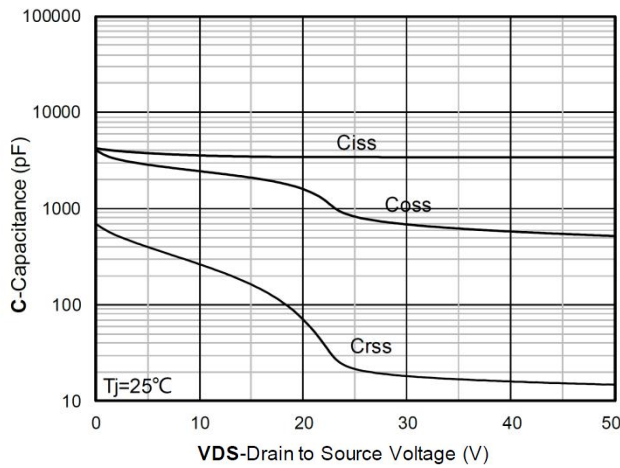
Typical Characteristics



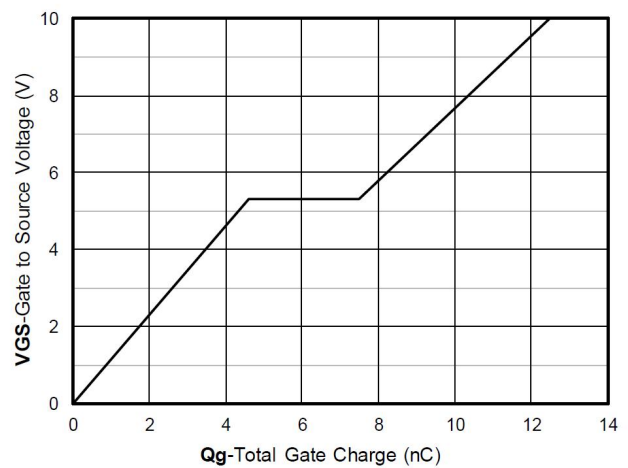
Output Characteristics



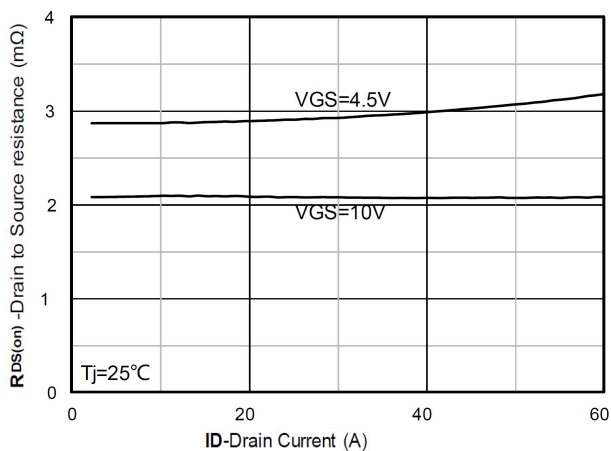
Transfer Characteristics



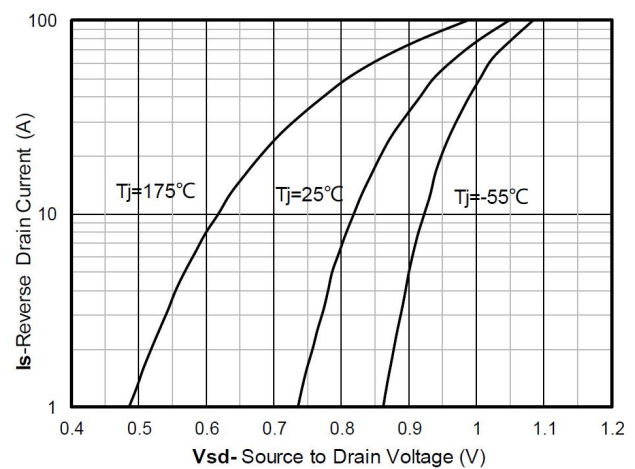
Capacitance Characteristics



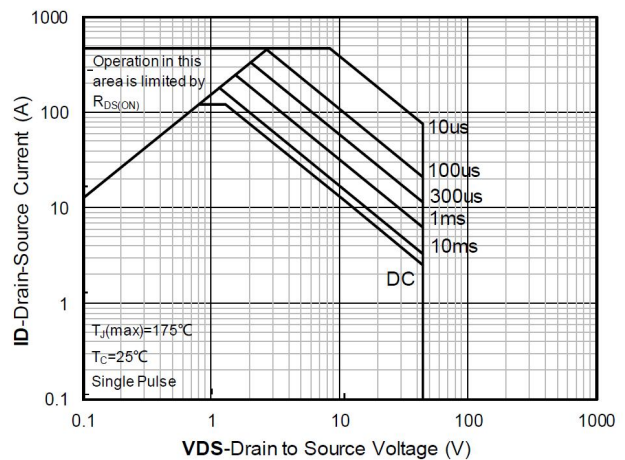
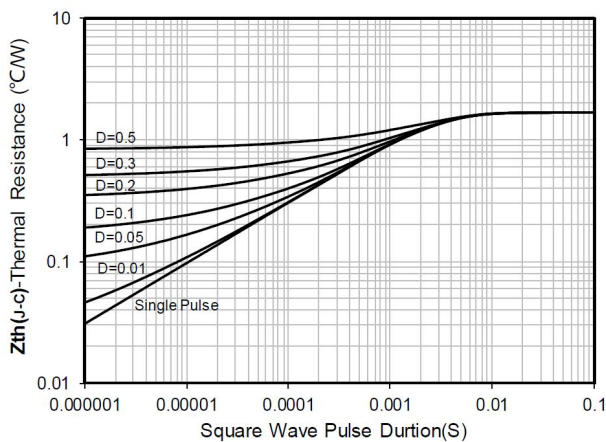
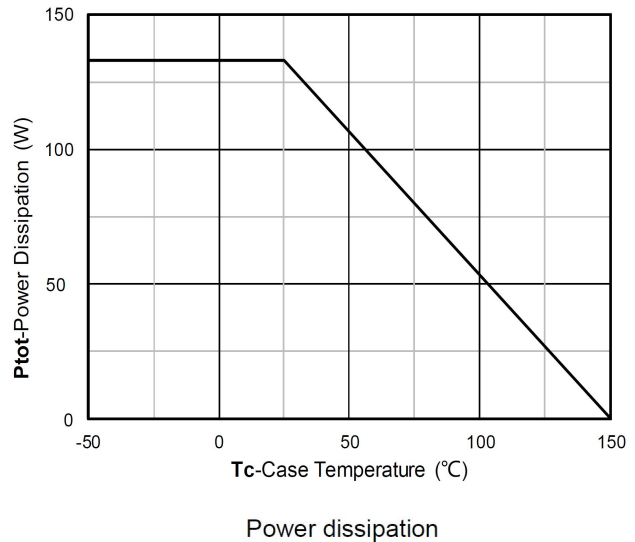
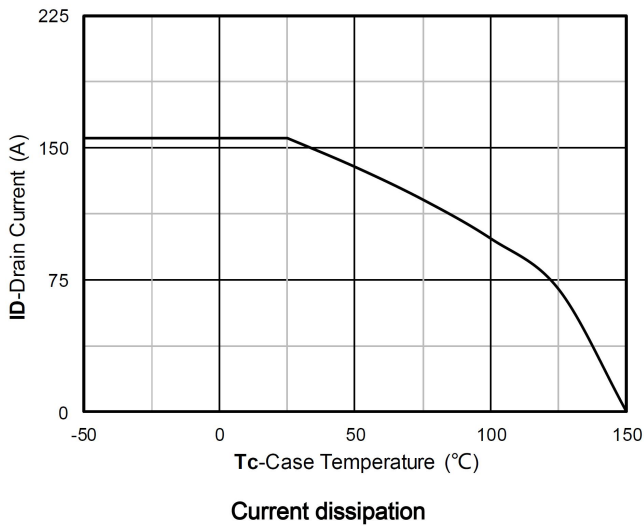
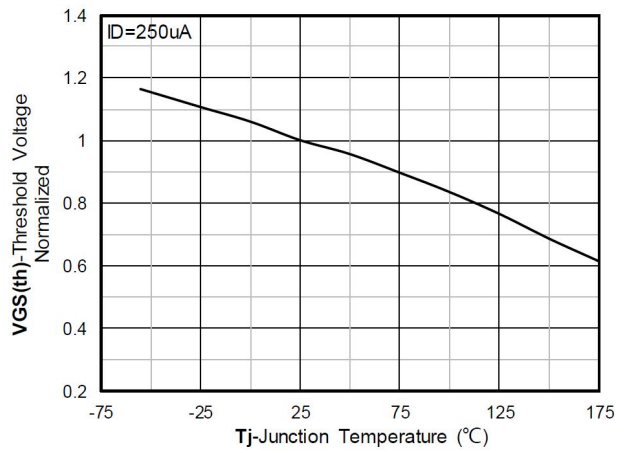
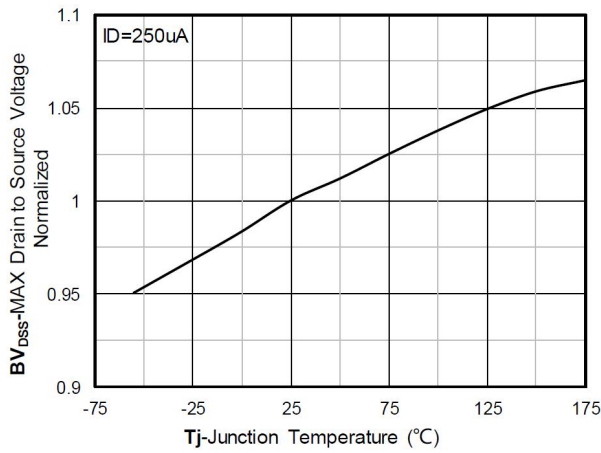
Gate Charge

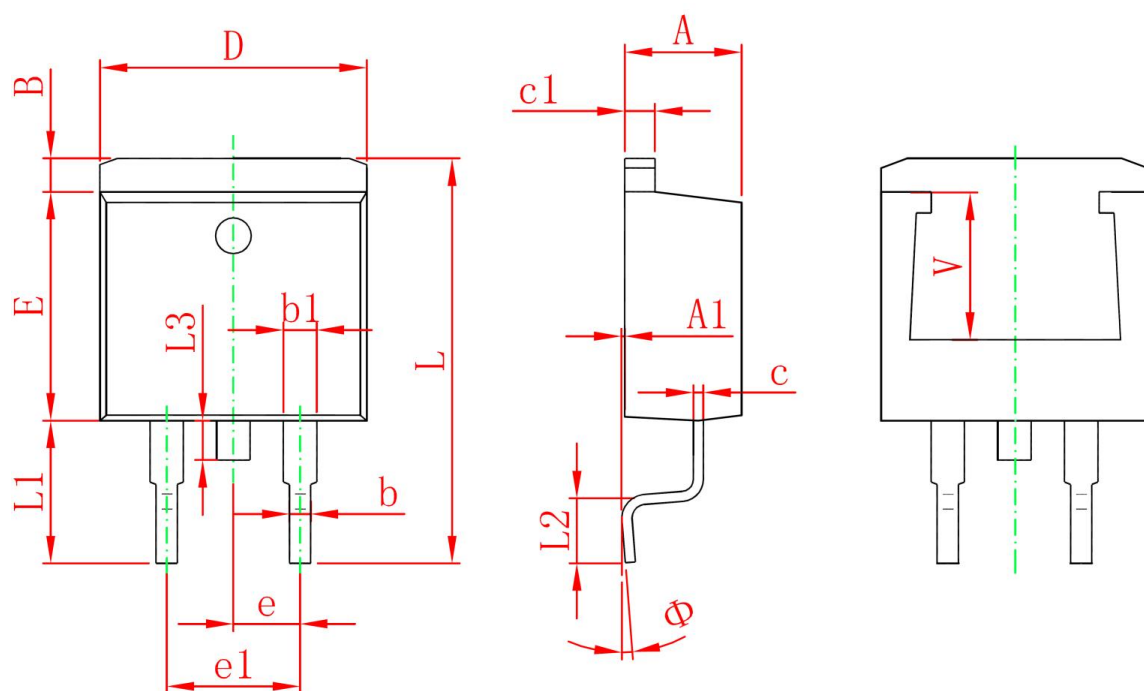


RDS(on) VS Drain Current



Forward characteristics of reverse diode



TO-263 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	