

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	4.9mΩ@10V	125A
	6.4mΩ@4.5V	



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

技术 品质 服务

www.siliup.com

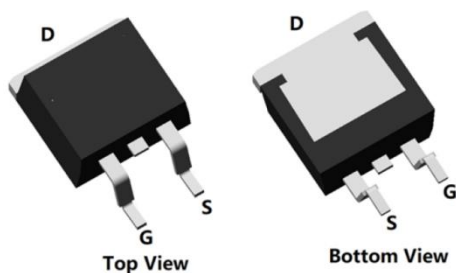
Feature

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

Applications

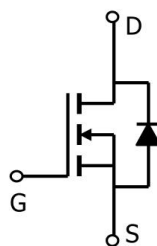
- DC-DC Converters
- Motor Control
- Portable equipment application

Package

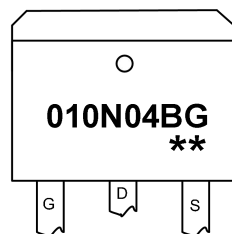


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



010N04BG : Device Code
****** : Week Code

Order Information

Device	Package	Unit/Tape
SP010N04BGTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	125	A
Continuous Drain Current (Tc=100°C)	I_D	83	A
Pulse Drain Current Tested	I_{DM}	500	A
Single pulsed avalanche energy ¹	E_{AS}	361	mJ
Power Dissipation (Tc=25°C)	P_D	185	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.68	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

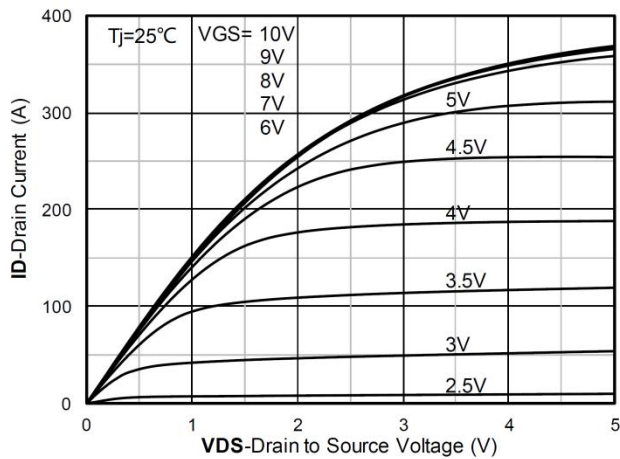
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	100	-	-	V
Drain-Source Leakage Current	IDSS	VDS=80V , 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	1.8	2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=10V , ID=30A	-	4.9	6.1	mΩ
		VGS=4.5V , ID=20A	-	6.4	8.5	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=50V , VGS=0V , f=1MHz	-	2970	-	pF
Output Capacitance	Coss		-	1125	-	
Reverse Transfer Capacitance	Crss		-	24	-	
Total Gate Charge	Qg	VDS=50V , VGS=10V , ID=50A	-	42	-	nC
Gate-Source Charge	Qgs		-	27	-	
Gate-Drain Charge	Qgd		-	7.3	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=50V , VGS=10V , RG=3Ω , ID=50A	-	12.1	-	nS
Rise Time	Tr		-	17.4	-	
Turn-Off Delay Time	Td(off)		-	47	-	
Fall Time	Tf		-	32	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Diode Continuous Current	IS		-	-	125	A
Reverse recover time	Trr	IS=50A, di/dt=100A/us, Tj=25℃	-	32	-	nS
Reverse recovery charge	Qrr		-	146	-	nC

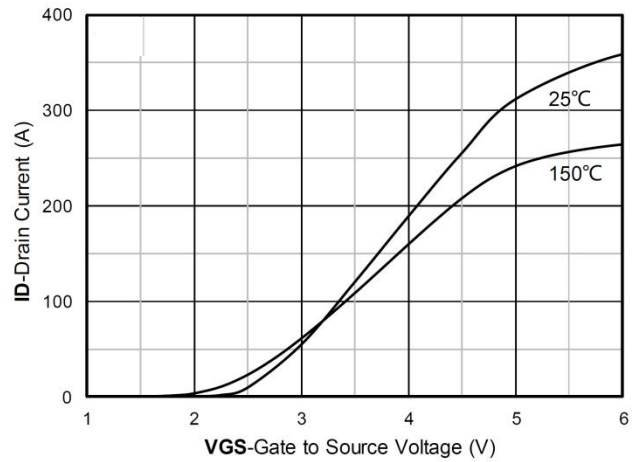
Note:

- The EAS Test condition is $V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$

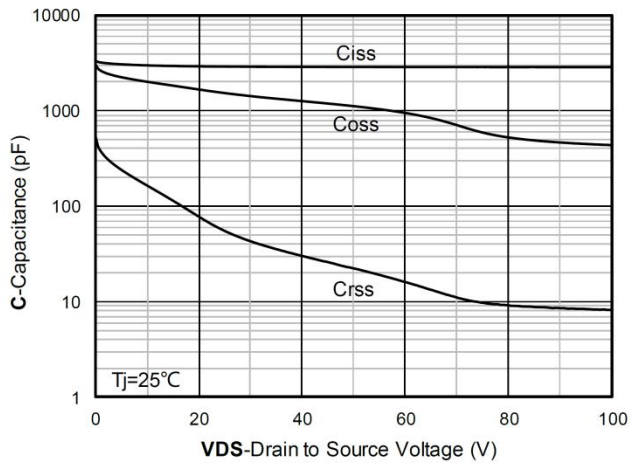
Typical Characteristics



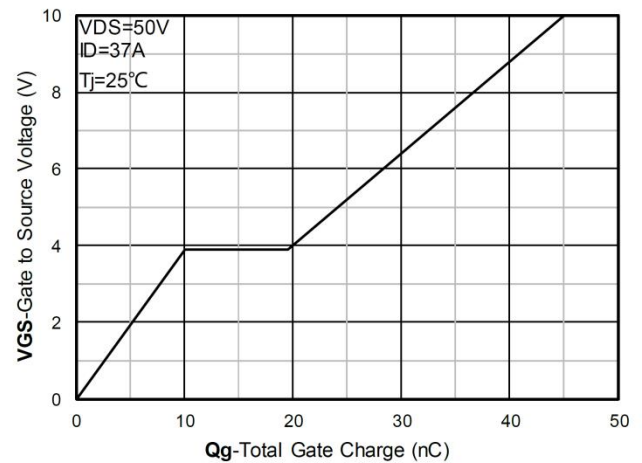
Output Characteristics



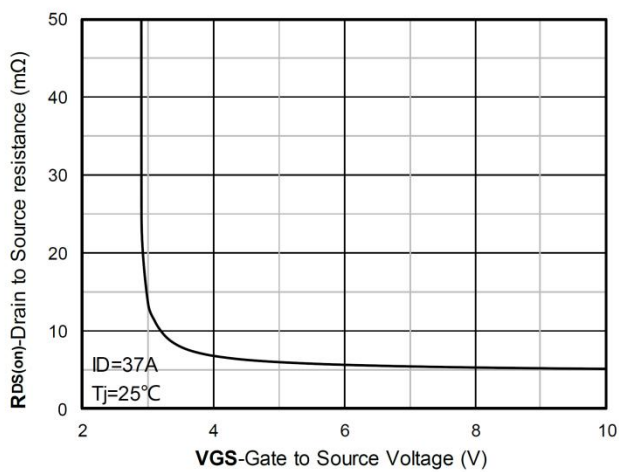
Transfer Characteristics



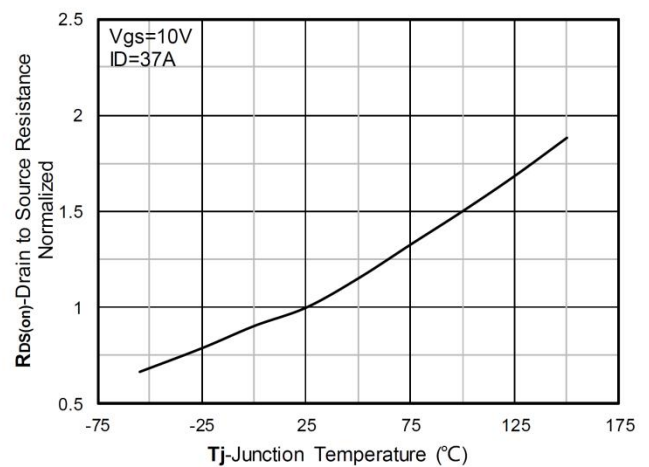
Capacitance Characteristics



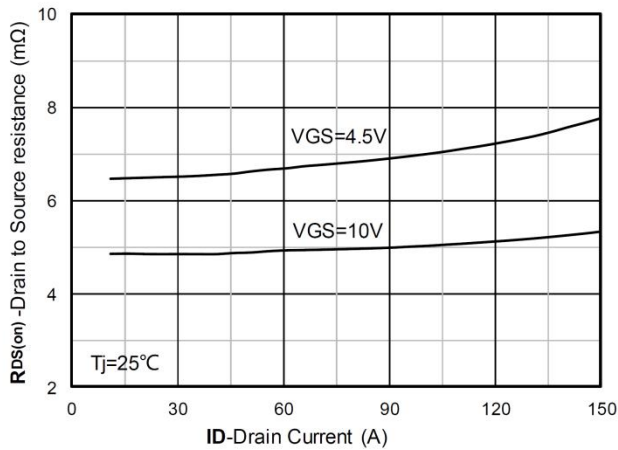
Gate Charge



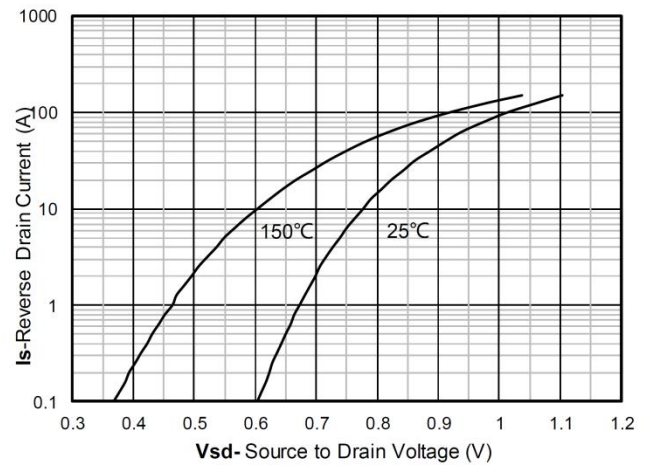
On-Resistance vs Gate to Source Voltage



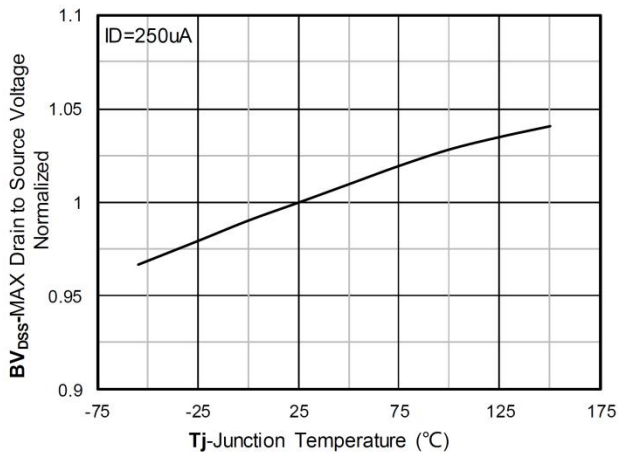
Normalized On-Resistance



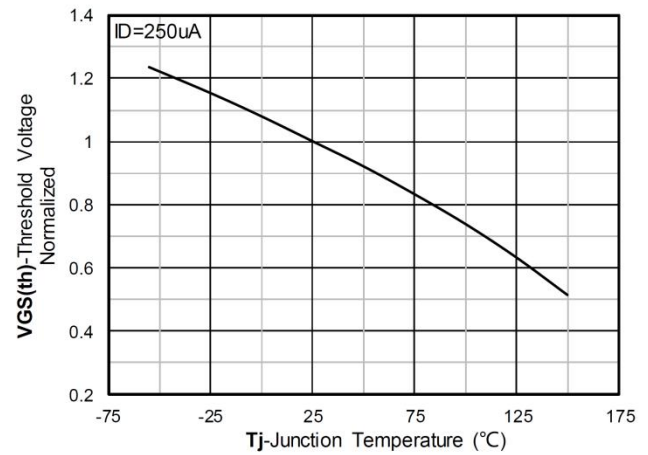
RDS(on) VS Drain Current



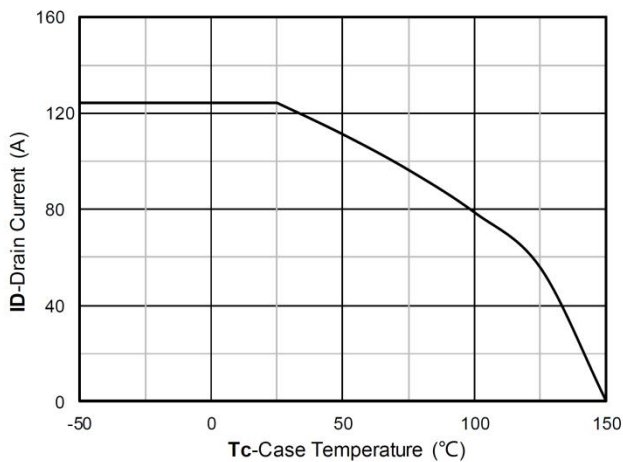
Forward characteristics of reverse diode



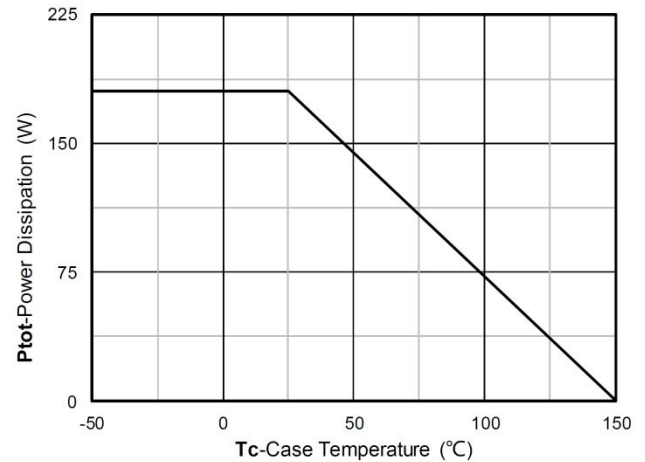
Normalized breakdown voltage



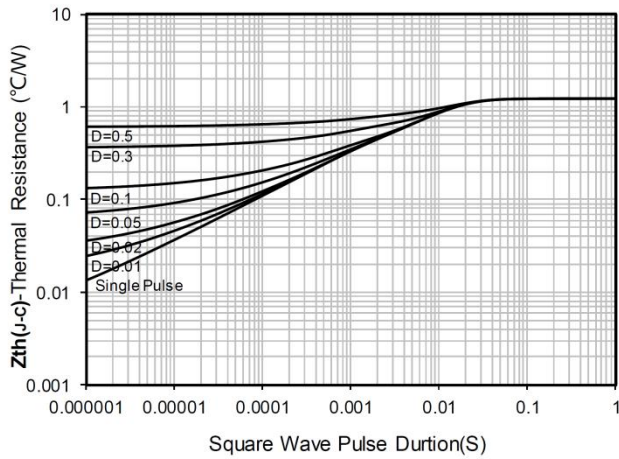
Normalized Threshold voltage



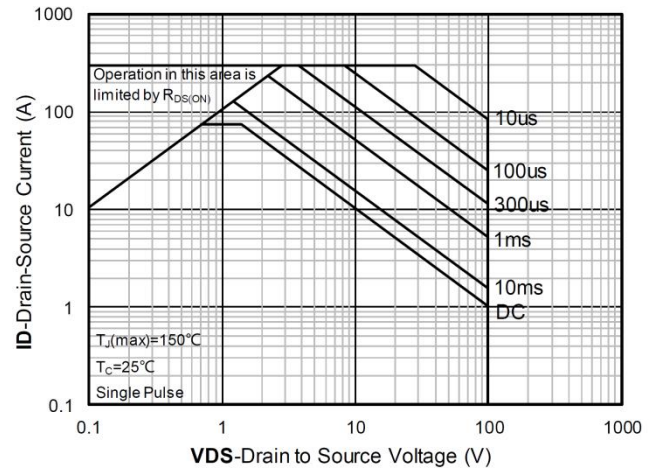
Current dissipation



Power dissipation

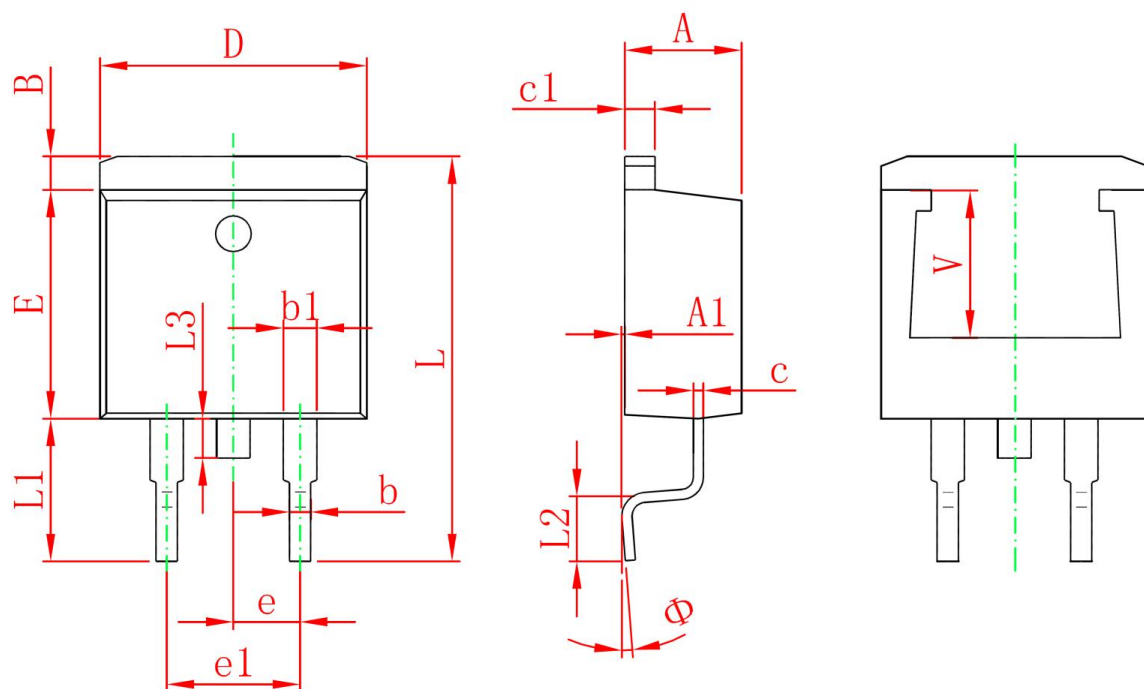


Maximum Transient Thermal Impedance



Safe Operation Area

TO-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.	