

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
85V	1.9mΩ@10V	260A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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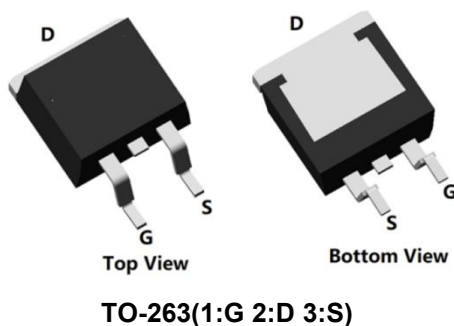
Feature

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

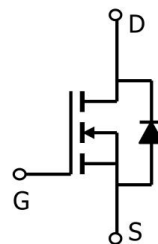
Applications

- Power switching application
- DC-DC Converter
- Power Management

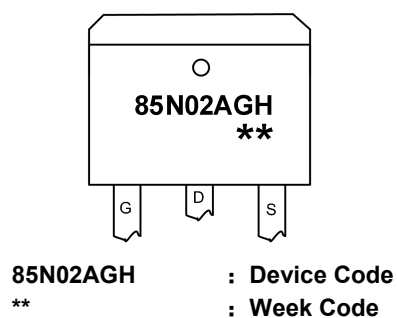
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP85N02AGHTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	260	A
Continuous Drain Current (Tc=100°C)	I_D	175	A
Pulsed Drain Current	I_{DM}	1040	A
Single Pulse Avalanche Energy ¹	E_{AS}	1650	mJ
Power Dissipation (Tc=25°C)	P_D	240	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.52	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

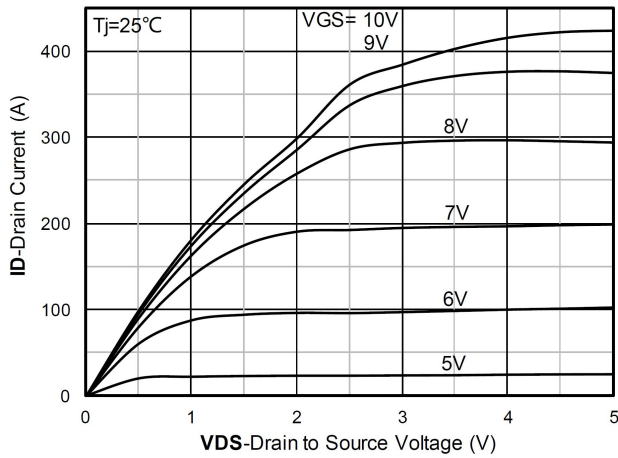
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$ID = 250\mu A, VGS = 0V$	85	90	-	V
Drain Cut-Off Current	$IDSS$	$VDS = 68V, VGS = 0V$	-	-	1	μA
Gate Leakage Current	$IGSS$	$VGS = \pm 20V, VDS = 0V$	-	-	± 0.1	
Gate Threshold Voltage	$VGS(th)$	$VDS = VGS, ID = 250\mu A$	2.5	3.0	3.5	V
Drain-Source ON Resistance	$RDS(ON)$	$VGS = 10V, ID = 20A$	-	1.9	2.5	m Ω
Dynamic Characteristics						
Input Capacitance	$Ciss$	$VDS = 40V, VGS = 0V, f = 1.0MHz$	-	9100	-	pF
Output Capacitance	$Coss$		-	4700	-	
Reverse Transfer Capacitance	$Crss$		-	190	-	
Total Gate Charge	Qg	$VDS = 40V, VGS = 10V, ID = 165A$	-	143	-	nC
Gate-Source Charge	Qgs		-	51	-	
Gate-Drain Charge	Qgd		-	25	-	
Switching Characteristics						
Turn-On Delay Time	$td(on)$	$VGS = 10V, VDS = 40V, ID = 165A, RG = 1.6\Omega$	-	27	-	nS
Rise Time	tr		-	75	-	
Turn-Off Delay Time	$td(off)$		-	86	-	
Fall Time	tf		-	35	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	$IS = 1A, VGS = 0V$	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	260	A
Reverse Recovery Time	Trr	$IS = 155A, di/dt = 100A/\mu s, TJ = 25^{\circ}C$	-	115	-	nS
Reverse Recovery Charge	Qrr		-	320	-	nC

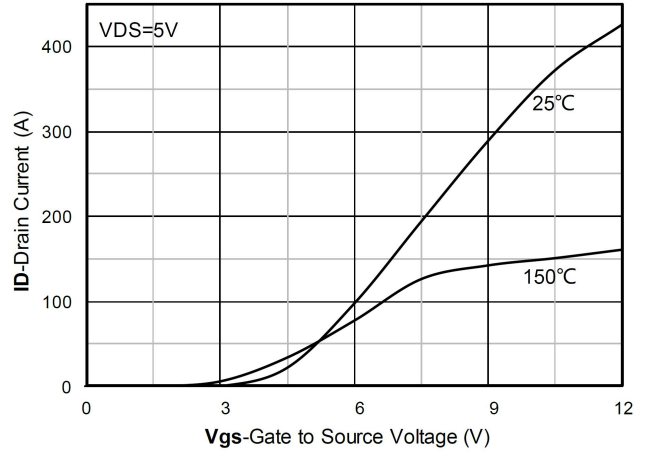
Note :

1. The test condition is VDD=45V, VGS=10V, L=0.5mH, RG=25 Ω

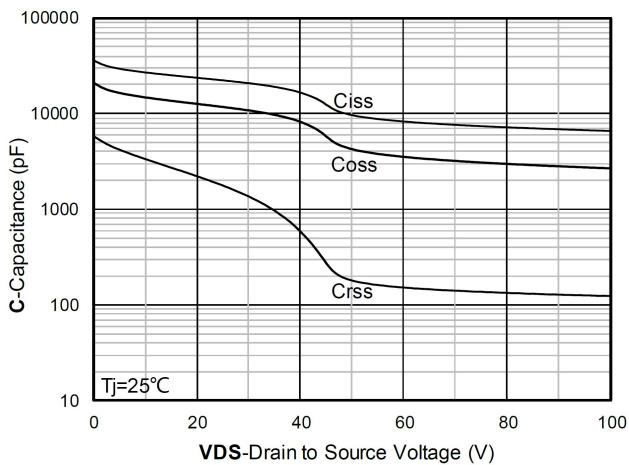
Typical Characteristics



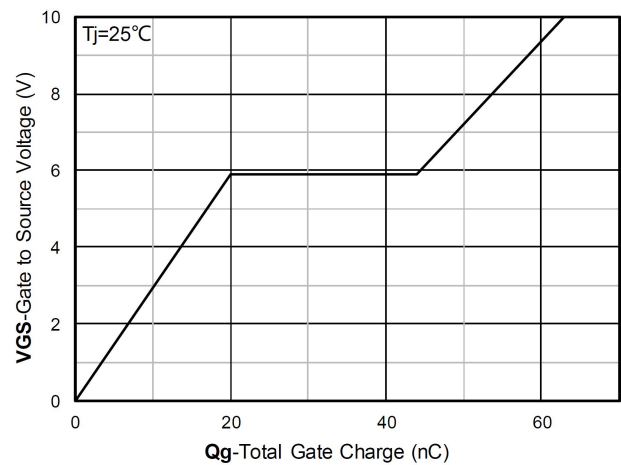
Output Characteristics



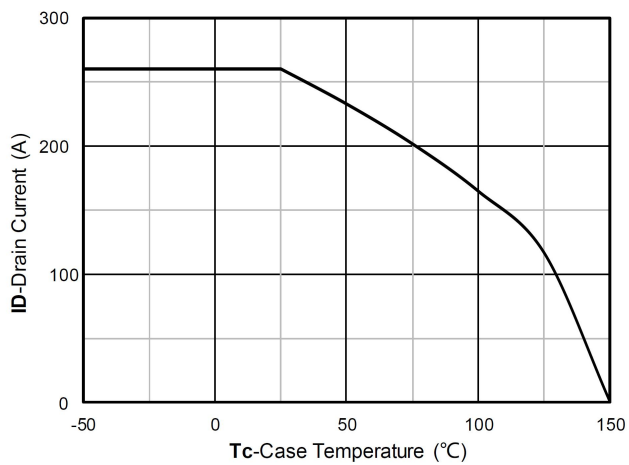
Transfer Characteristics



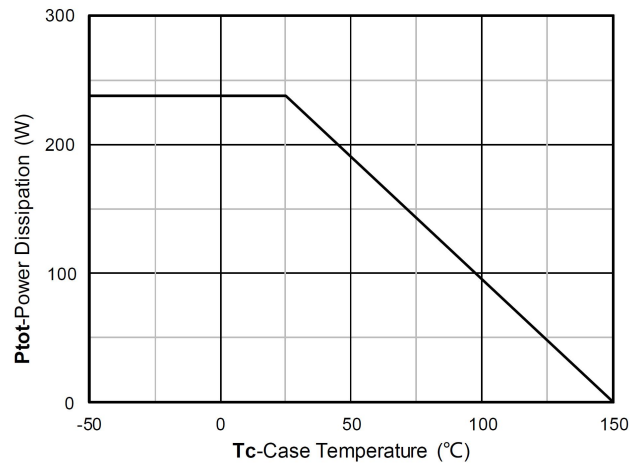
Capacitance Characteristics



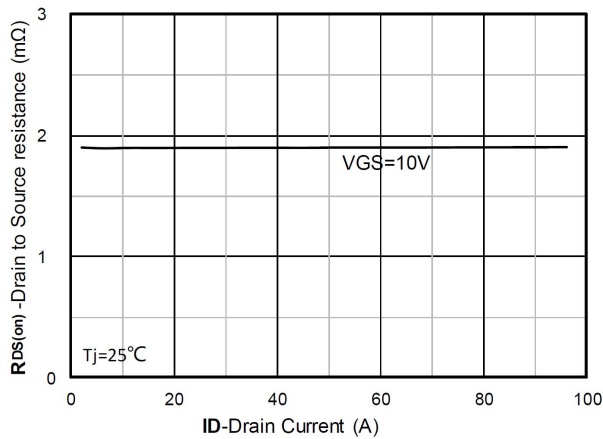
Gate Charge



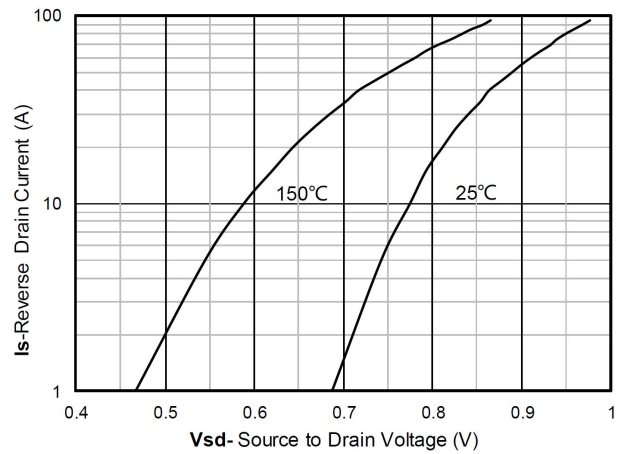
Current dissipation



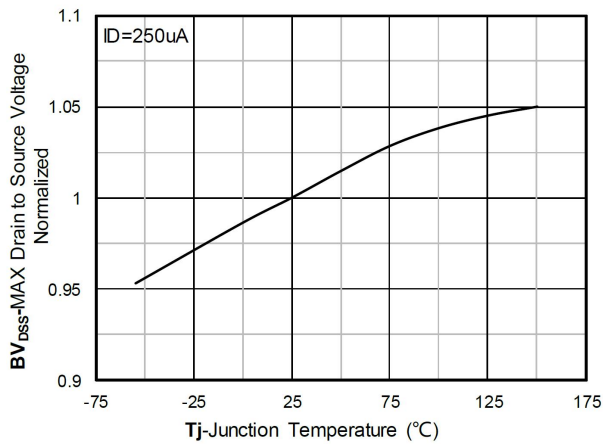
Power dissipation



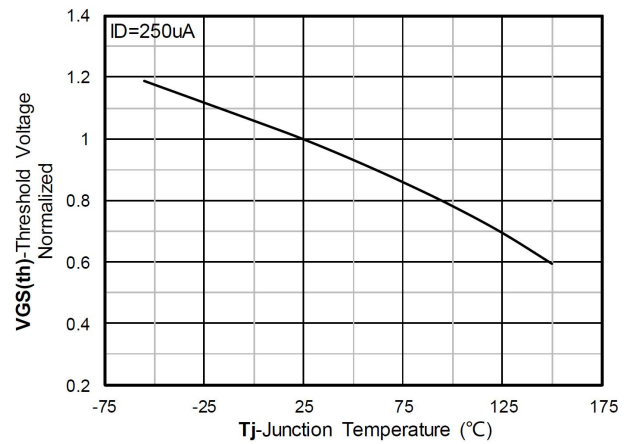
RDS(on) VS Drain Current



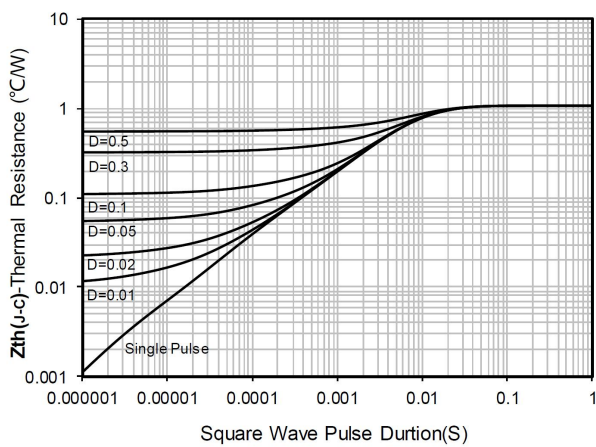
Forward characteristics of reverse diode



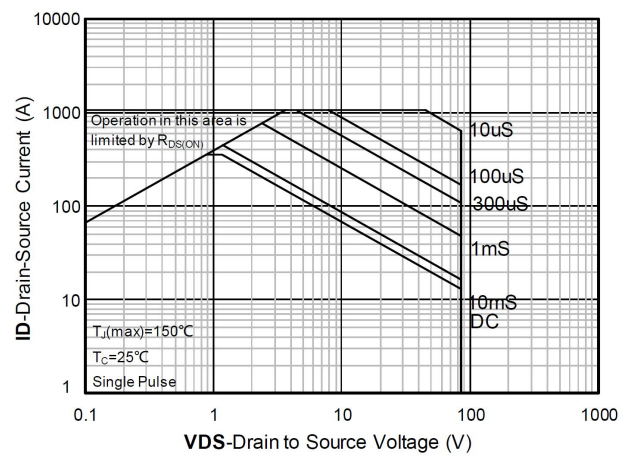
Normalized breakdown voltage



Normalized Threshold voltage

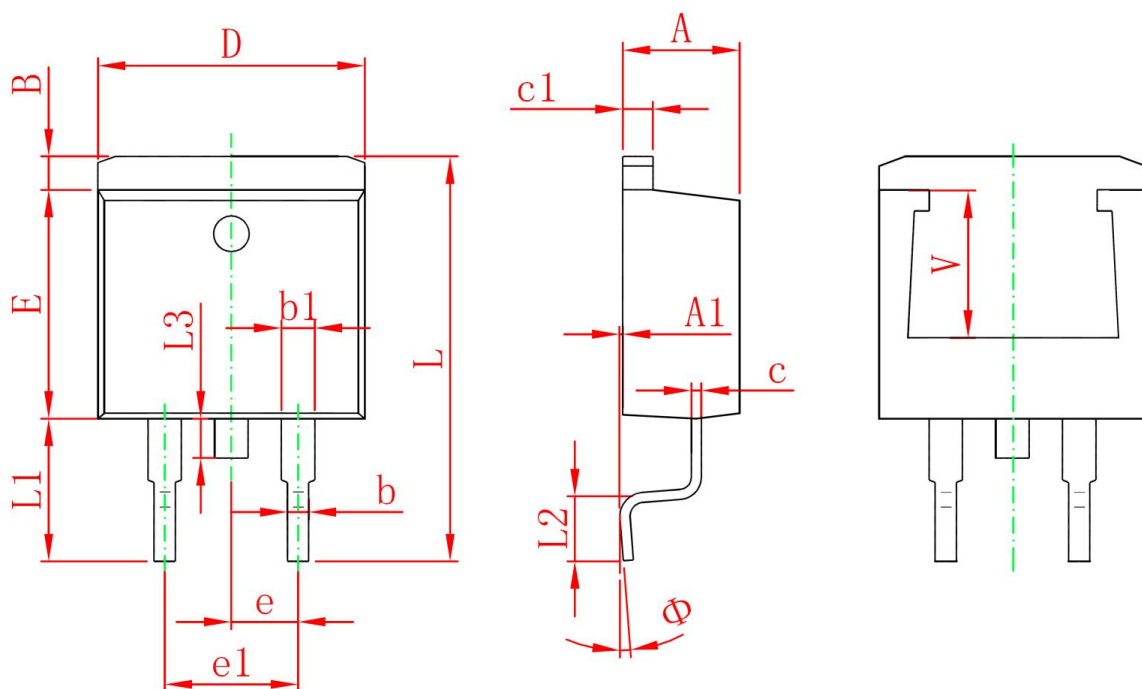


Maximum Transient Thermal Impedance



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.	