Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
85V	4.5mΩ@10V	110A

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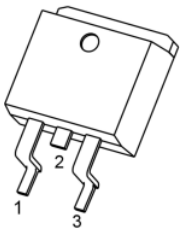
Feature

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

Applications

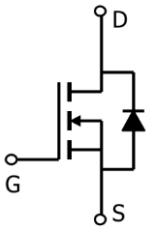
- Power switching application
- PWM Application
- DC-DC Converter

Package

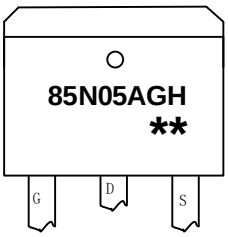


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



85N05AGH =Device Code
** =Week Code

Order Information

Device	Package	Unite/Tape
SP85N05AGHTD	TO-263-3L	800

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

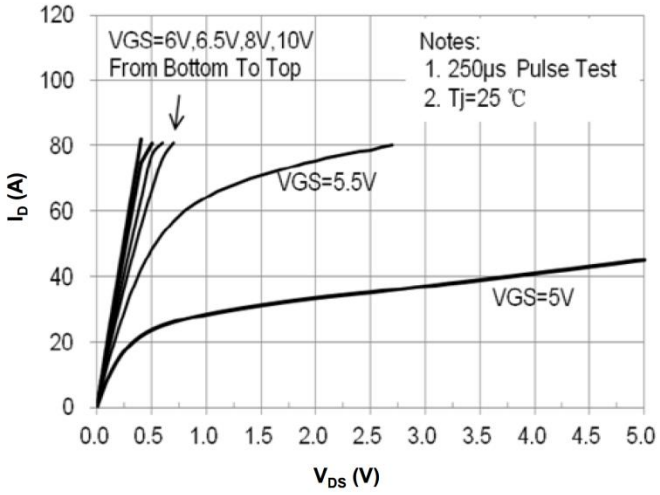
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current(Tc=25℃)	I_D	110	A
Pulsed Drain Current[2]	I_{DM}	440	A
Single Pulse Avalanche Energy [3]	E_{AS}	116	mJ
Total Power Dissipation [4](Tc=25℃)	P_D	169	W
Thermal Resistance Junction-Case [1]	$R_{\theta JC}$	0.74	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Electrical characteristics (Ta=25℃, unless otherwise noted)

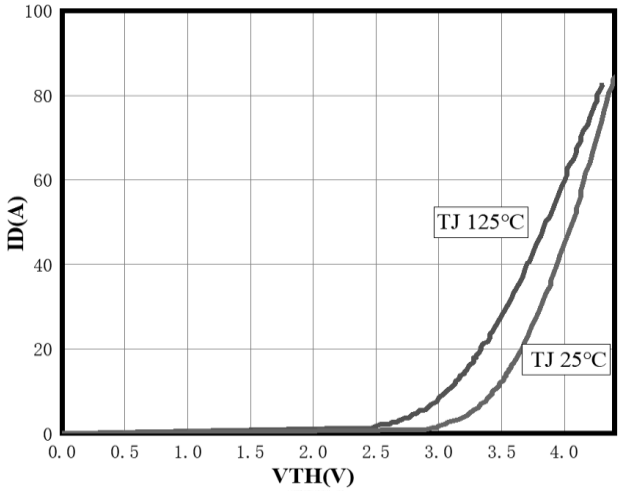
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	85	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=85V , VGS=0V , TJ=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	VGS=10V , ID=20A	---	4.5	5.7	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=40V , VGS=0V , f=1MHz	---	2777	---	pF
Output Capacitance	C_{oss}		---	951	---	
Reverse Transfer Capacitance	C_{rss}		---	26	---	
Switching Characteristics						
Total Gate Charge	Q_g	VDS=40V , VGS=10V , ID=50A	---	49	---	nC
Gate-Source Charge	Q_{gs}		---	13	---	
Gate-Drain Charge	Q_{gd}		---	11	---	
Turn-On Delay Time	$T_{d(on)}$	VDD=40V , VGS=10V , RG=3Ω , ID=50A	---	19	---	ns
Rise Time	T_r		---	35	---	
Turn-Off Delay Time	$T_{d(off)}$		---	43	---	
Fall Time	T_f		---	22	---	
Source-Drain Diode Characteristics						
Diode Forward Voltage[2]	V_{SD}	VGS=0V , IS=1A , TJ=25℃	---	---	1.2	V

Note :
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is VDD=42.5V,VGS=10V,L=0.5mH,IAS=46A
4. The power dissipation is limited by 150℃ junction temperature

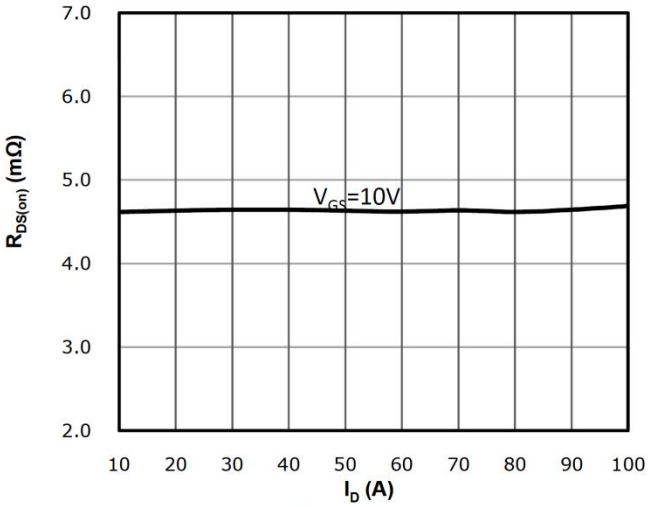
Typical Characteristics



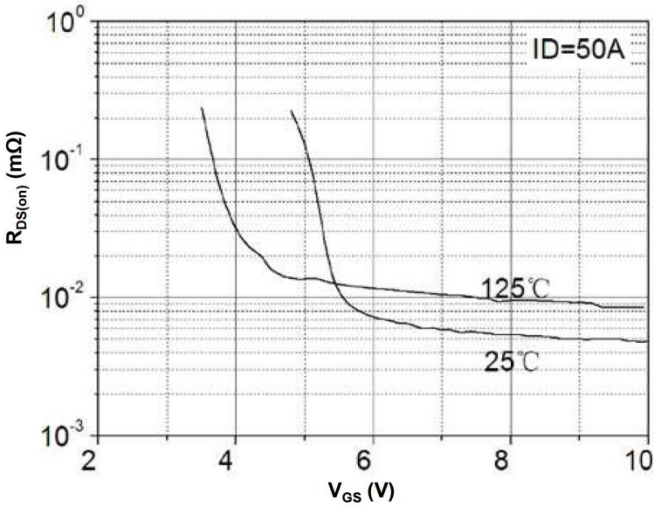
Output Characteristics



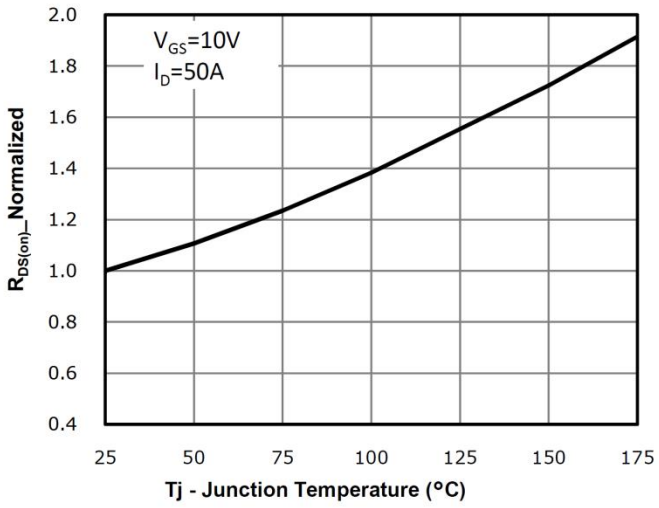
Transfer Characteristics



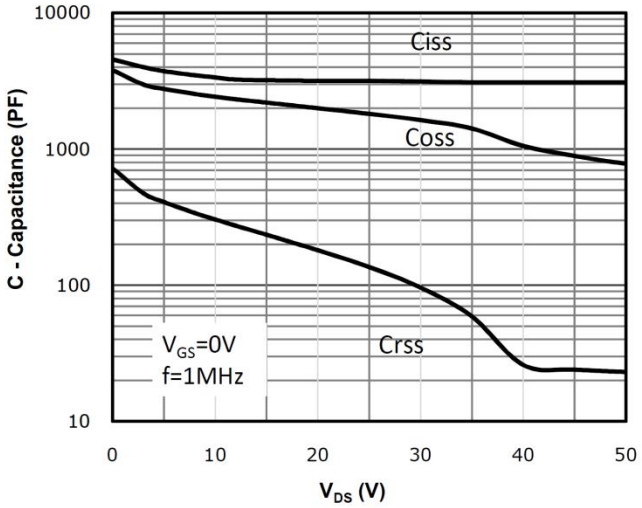
Rds(on) vs Drain Current and Gate Voltage



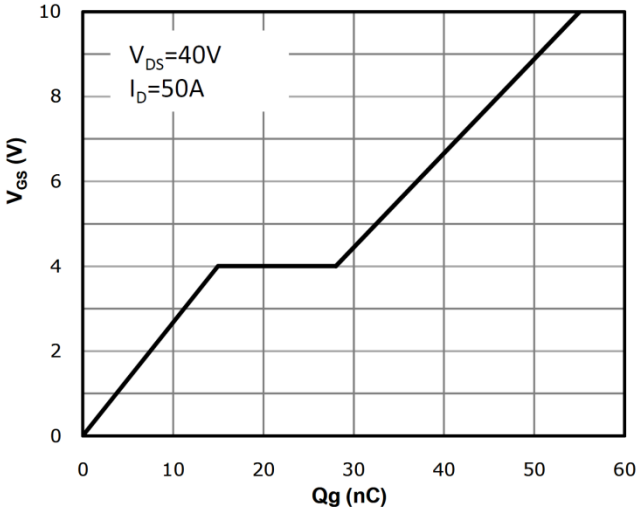
Rds(on) vs Gate Voltage



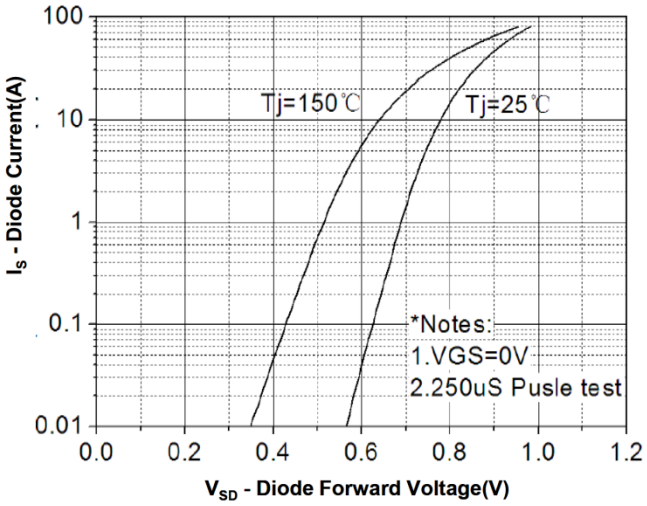
Rds(on) vs. Temperature



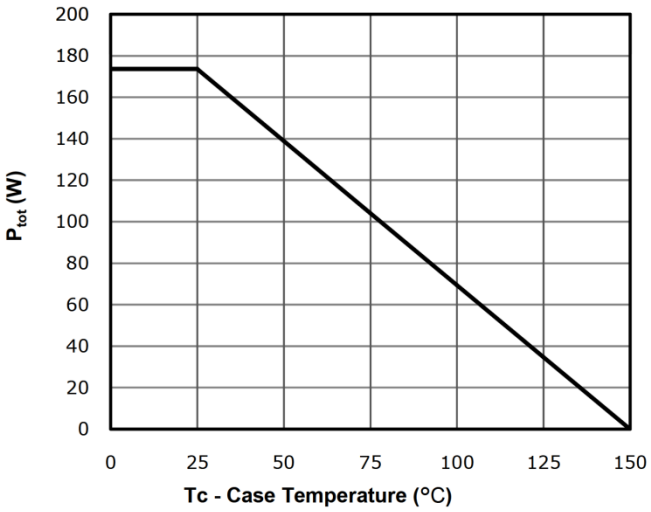
Capacitance Characteristics



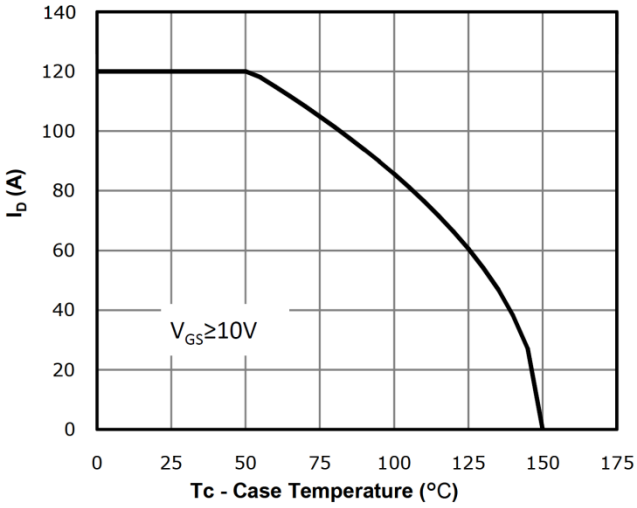
Gate Charge Characteristics



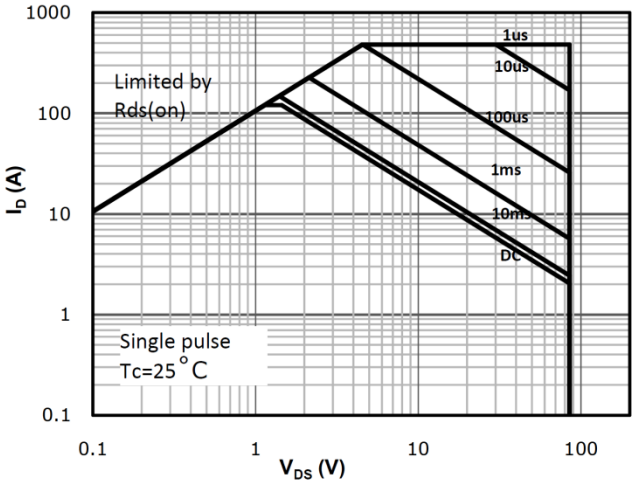
Body-diode Forward Characteristics



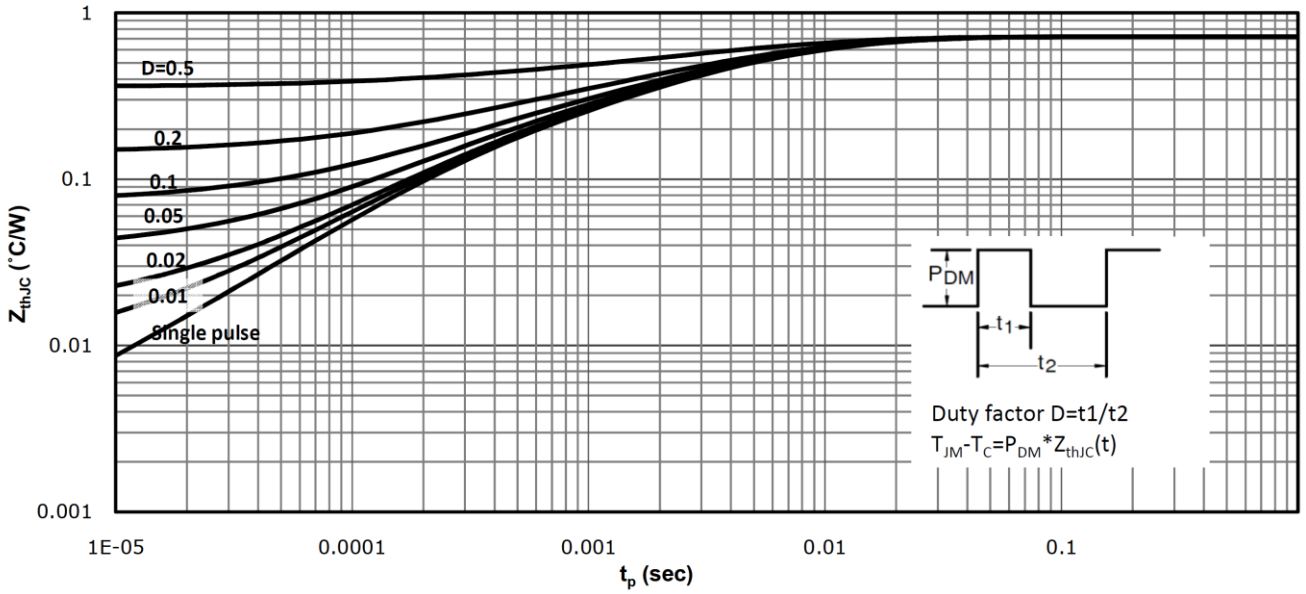
Power Dissipation



Drain Current Derating

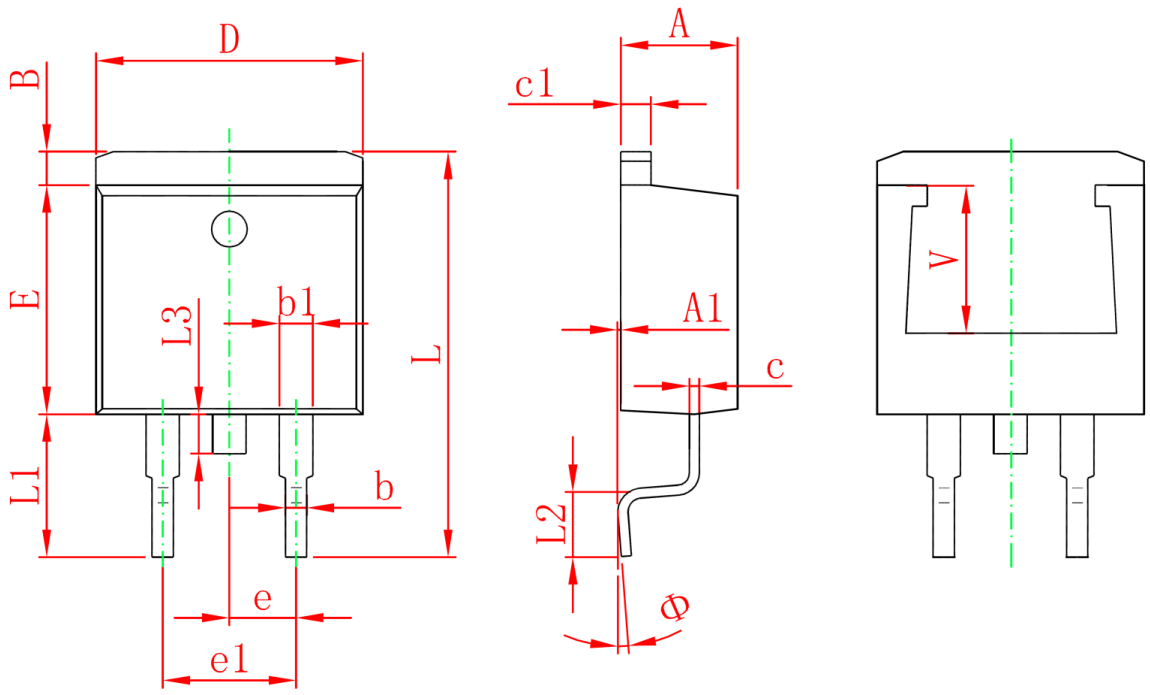


Safe Operating Area



Max. Transient Thermal Impedance

TO-263 Package Outline Dimensions



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.	

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