

Product Summary

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



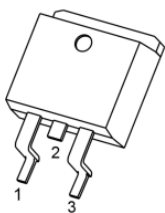
Feature

- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

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

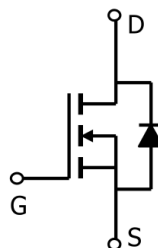
Applications

Package

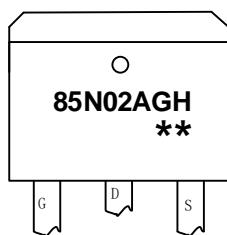


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



85N02AGH : Product code
** : Week code

Order Information

Device	Package	Unite/Tape
SP85N02AGHTD	TO-263-3L	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
Pulsed drain current	I_{DM}	1040	A
Power dissipation(Tc=25°C)	P_D	300	W
Single pulsed avalanche energy ¹⁾	E_{AS}	375	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.42	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

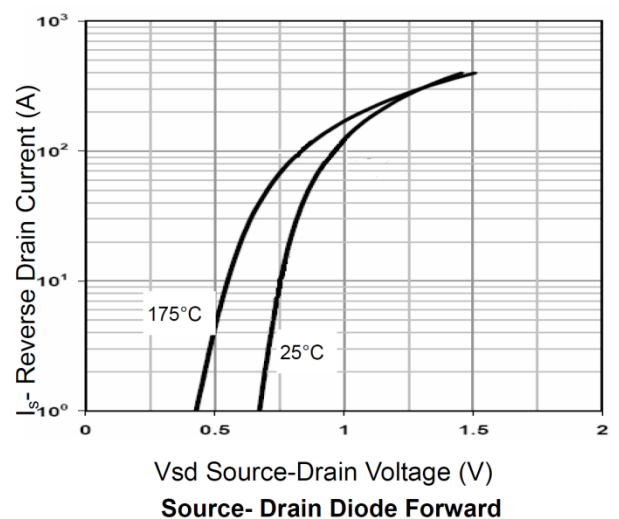
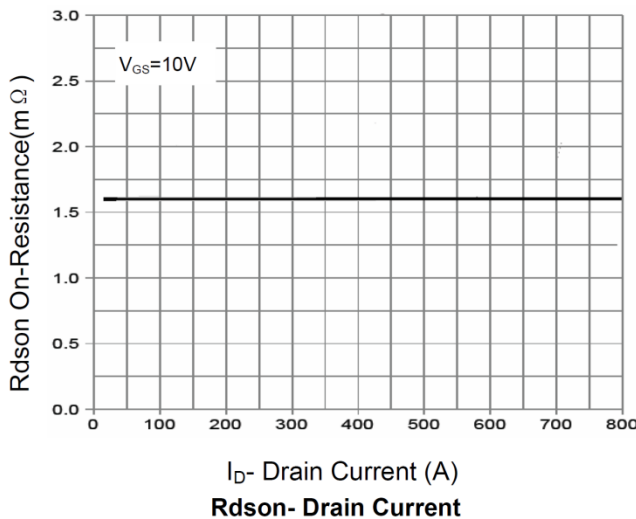
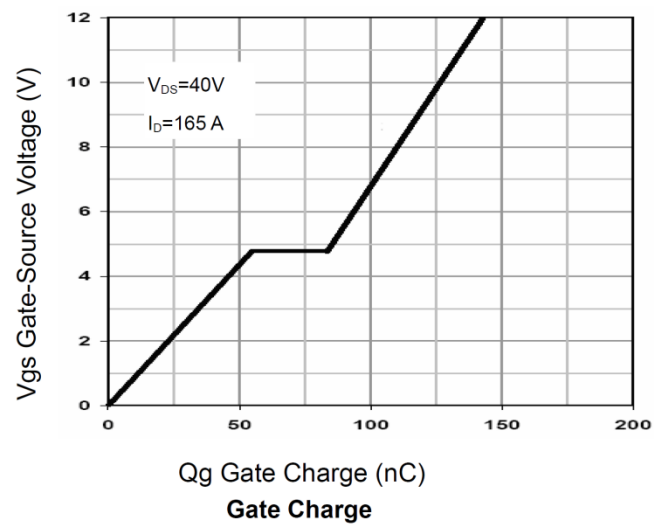
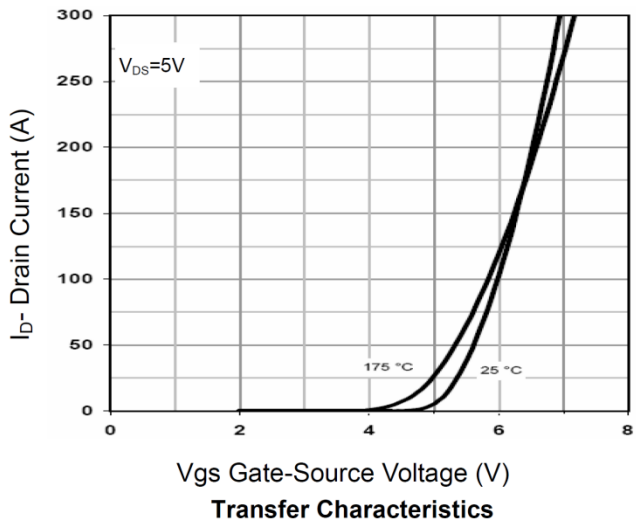
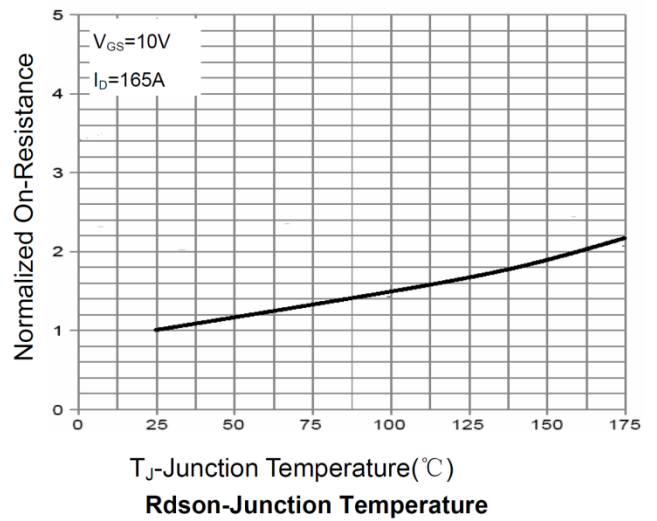
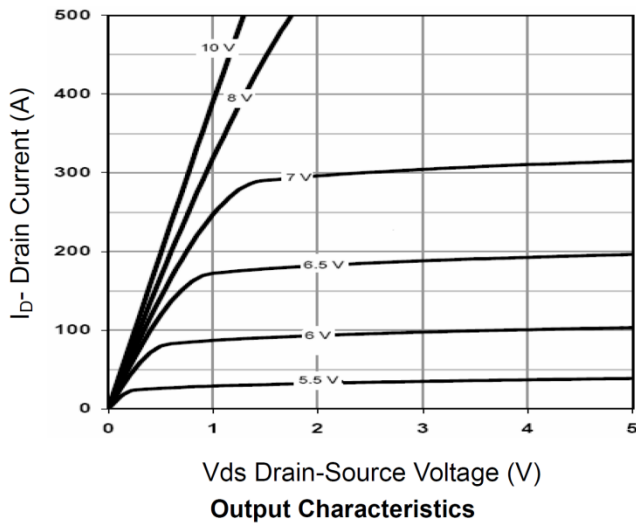
Electrical characteristics (Ta=25°C, unless otherwise noted)

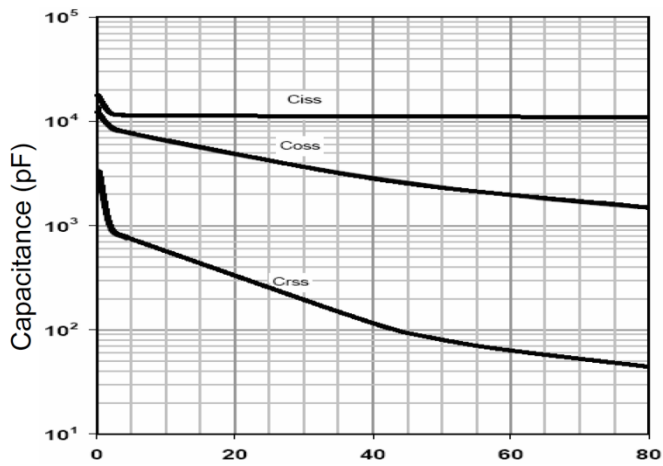
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\mu A, V_{GS} = 0V$	85	-	-	V
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 68V, V_{GS} = 0V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 0.1	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.0	3.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$	-	1.9	2.5	$m\Omega$
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 40V, V_{GS} = 0V, f = 1.0MHz$	-	9860	-	pF
Output Capacitance	C_{oss}		-	1670	-	
Reverse Transfer Capacitance	C_{rss}		-	76	-	
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 40V, V_{GS} = 10V, I_D = 165A$	-	143	-	nC
Gate-Source Charge	Q_{gs}		-	51	-	
Gate-Drain Charge	Q_{gd}		-	25	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 40V, I_D = 165A, R_G = 1.6\Omega$	-	27	-	ns
Rise Time	t_r		-	75	-	
Turn-Off Delay Time	$t_{d(off)}$		-	86	-	
Fall Time	t_f		-	35	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V

Note:

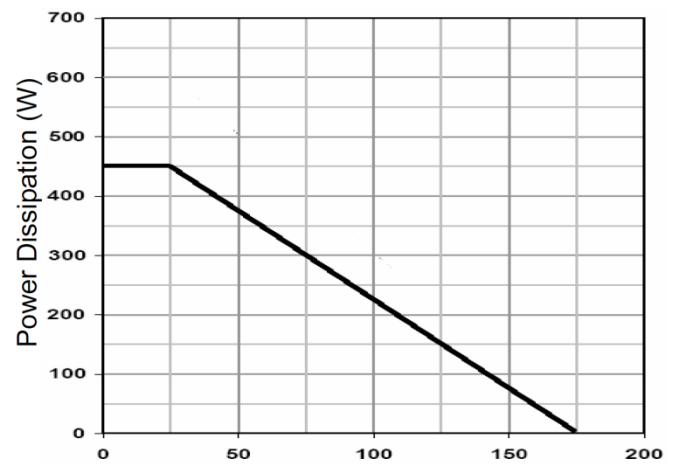
- E_{AS} is tested at starting $T_j = 25^\circ C, V_{DD} = 45V, V_{GS} = 10V, L = 0.1mH, R_g = 25\Omega$;

Typical Characteristics

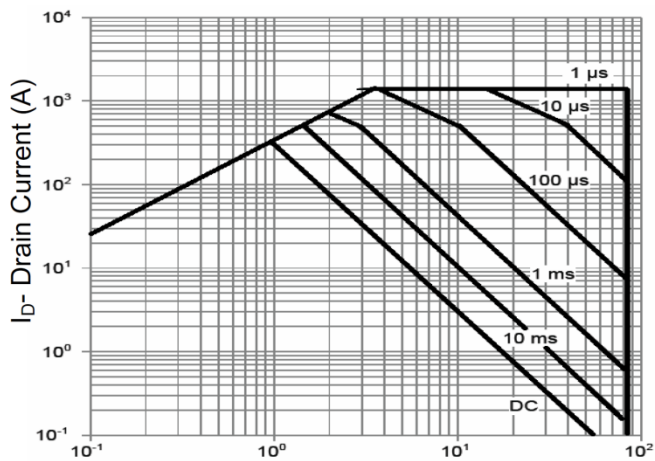




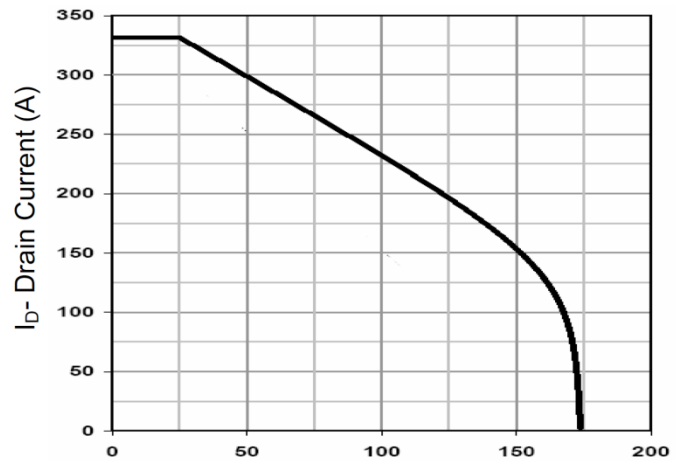
V_{ds} Drain-Source Voltage (V)
Capacitance vs V_{ds}



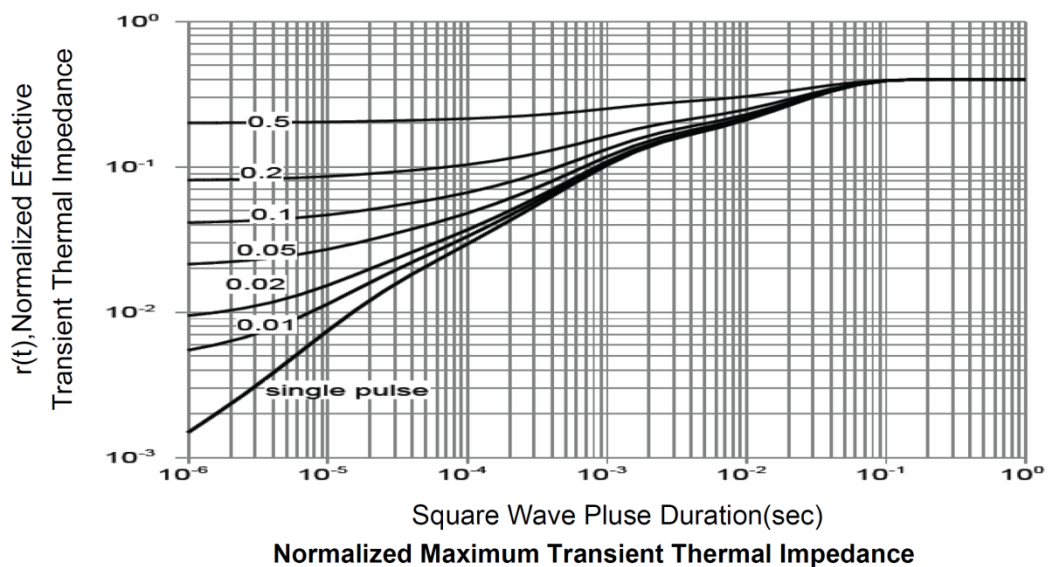
T_J-Junction Temperature(°C)
Power De-rating



V_{ds} Drain-Source Voltage (V)
Safe Operation Area

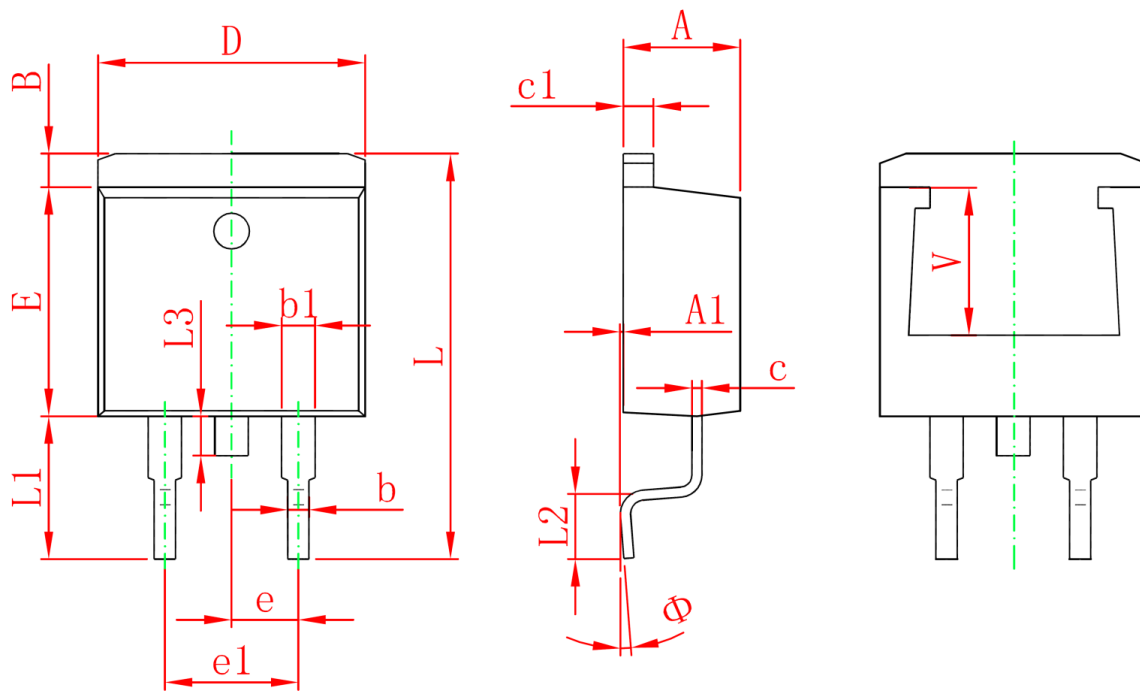


T_J-Junction Temperature (°C)
Current De-rating



Normalized Maximum 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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