

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
85V	1.7mΩ@10V	280A

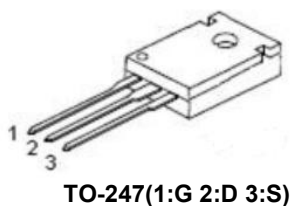
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

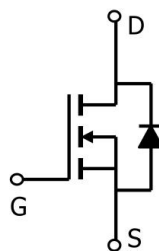
Applications

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

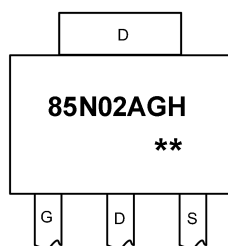
Package



Circuit diagram



Marking



85N02AGH : Product code
****** : Week code



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	280	A
Pulsed drain current	I_{DM}	1120	A
Power dissipation(Tc=25°C)	P_D	380	W
Single pulsed avalanche energy ¹⁾	E_{AS}	375	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.33	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

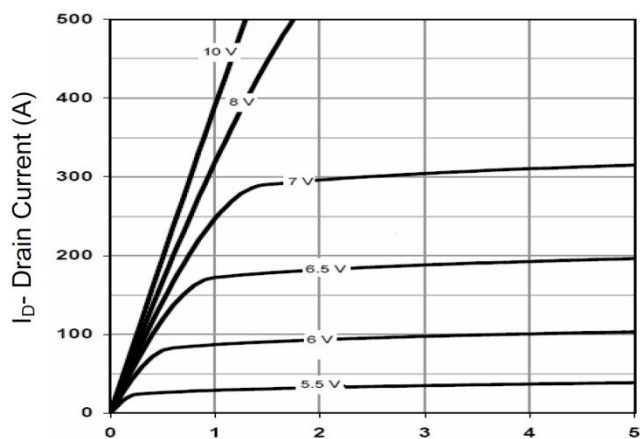
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA, 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} = ±20V, V _{DS} = 0V	-	-	±0.1	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.0	2.8	4.0	V
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	1.7	2.5	mΩ
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 = 1.6Ω	-	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

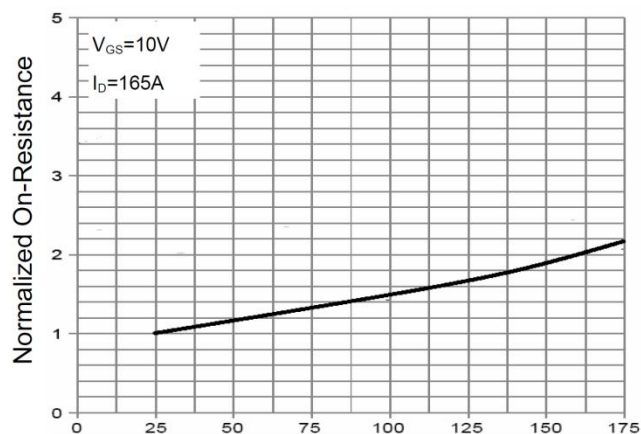
Note:

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

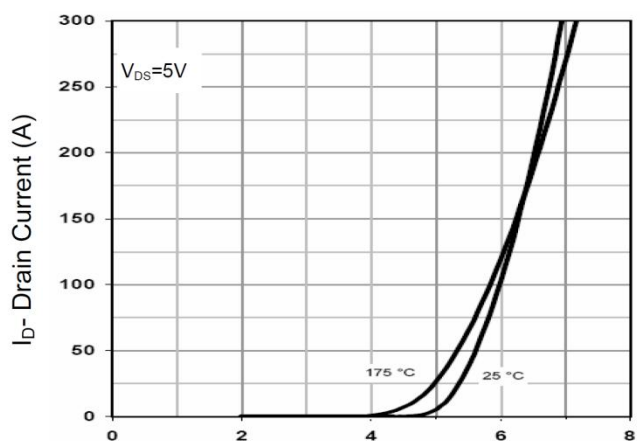
Typical Characteristics



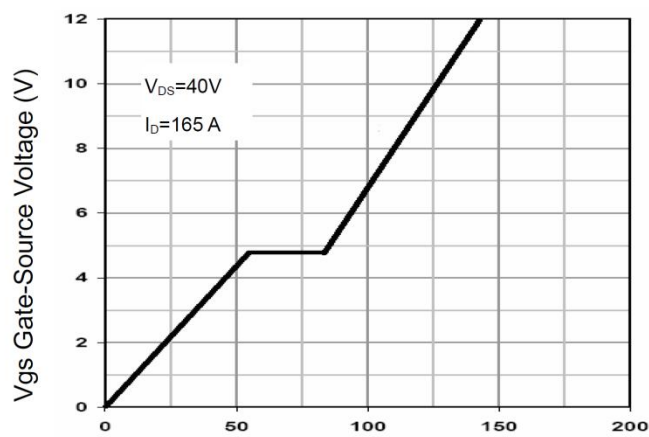
V_{DS} Drain-Source Voltage (V)
Output Characteristics



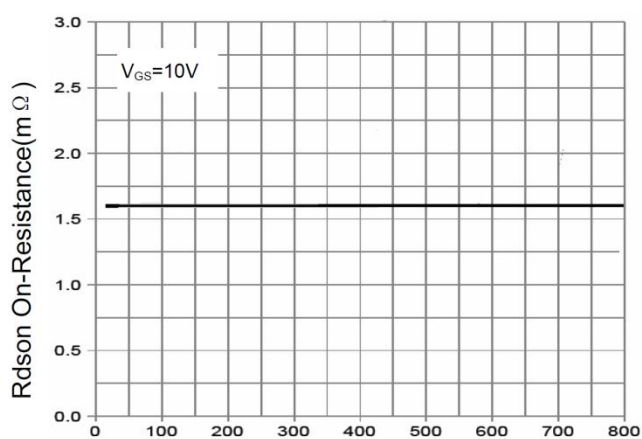
T_J -Junction Temperature($^{\circ}C$)
 $R_{DS(on)}$ -Junction Temperature



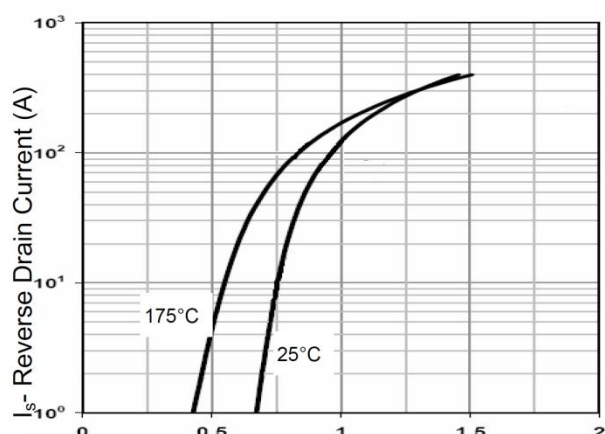
V_{GS} Gate-Source Voltage (V)
Transfer Characteristics



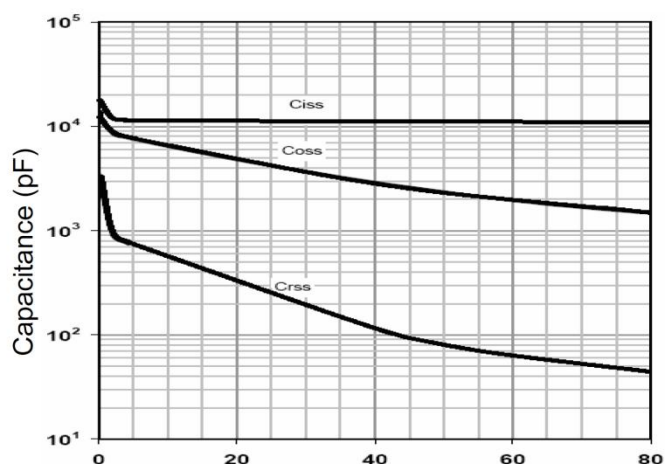
Q_g Gate Charge (nC)
Gate Charge



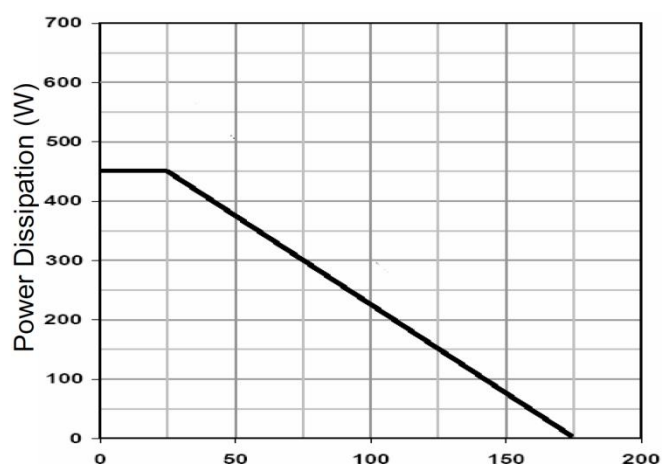
I_D - Drain Current (A)
 $R_{DS(on)}$ - Drain Current



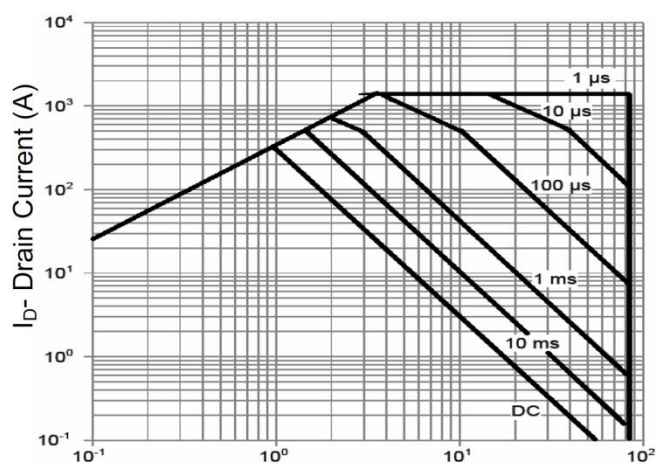
V_{SD} Source-Drain Voltage (V)
Source- Drain Diode Forward



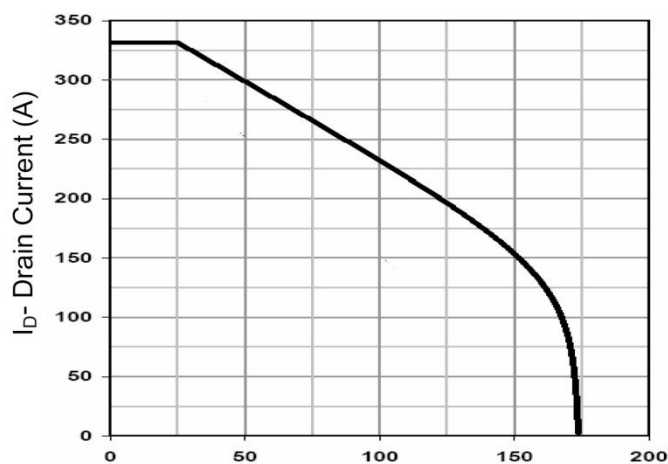
V_{ds} Drain-Source Voltage (V)
Capacitance vs V_{ds}



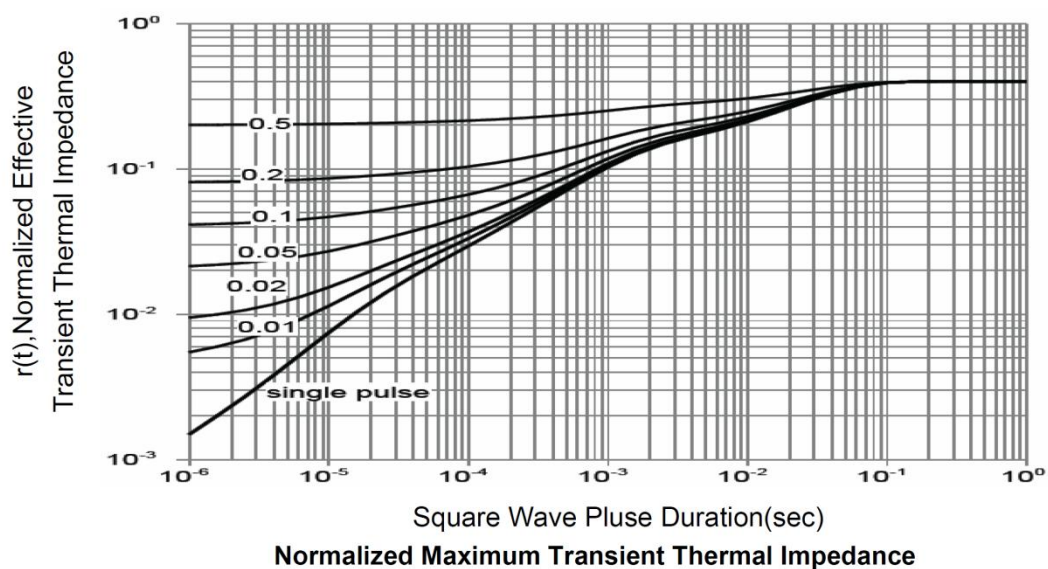
T_J -Junction Temperature($^{\circ}C$)
Power De-rating



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

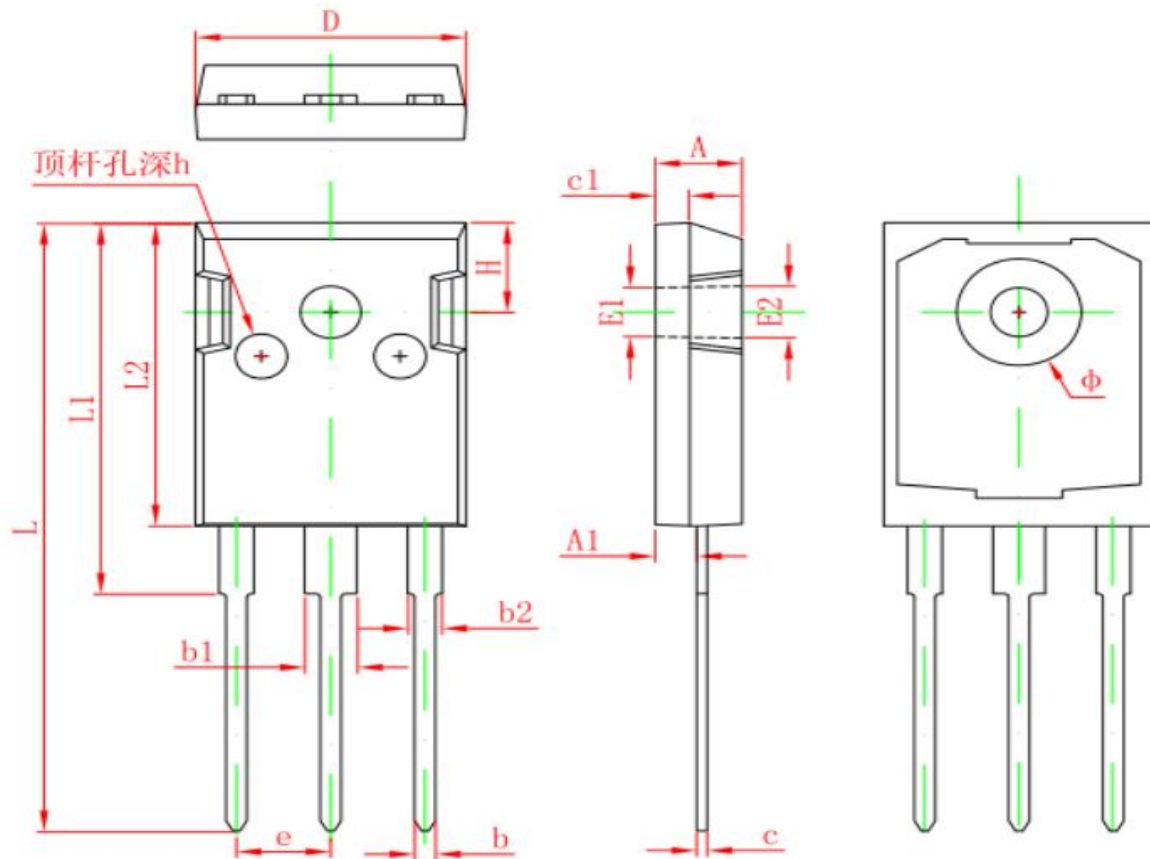


T_J -Junction Temperature ($^{\circ}C$)
Current De-rating





TO-247 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012