Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
85V	2.2mΩ@10V	260A

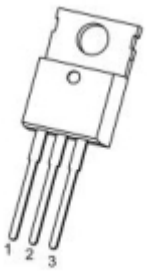
Feature

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

Applications

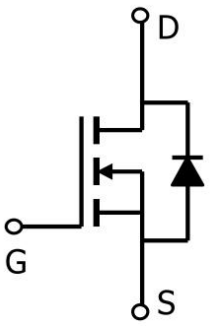
- Power switching application
- DC-DC Converter
- Uninterruptible power supply

Package

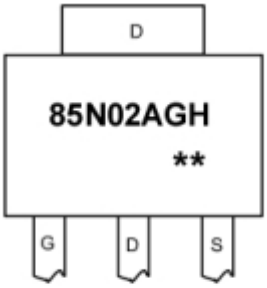


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



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

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	85	V
Gate source voltage	V_{GS}	±20	V
Continuous drain current(Tc=25℃)	I_D	260	A
Pulsed drain current	I_{DM}	1040	A
Power dissipation(Tc=25℃)	P_D	300	W
Single pulsed avalanche energy[1)]	E_{AS}	375	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.42	℃/W
Operation and storage temperature	T_J, T_{STG},	-55 to 150	℃

Electrical characteristics

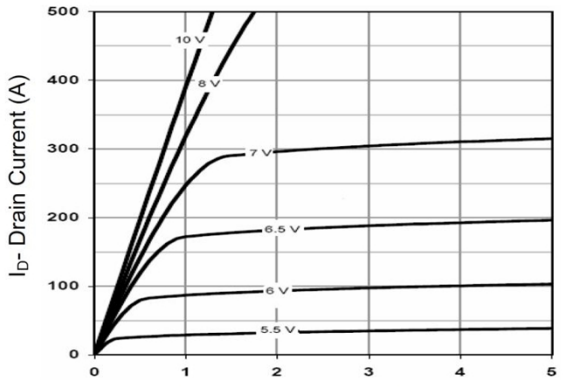
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	85			V
Drain Cut-Off Current	I_{DSS}	V_{DS} =68V, V_{GS} = 0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±0.1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.5	3.0	3.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		2.2	2.8	mΩ
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=40V, V_{GS}=0V, f=1MHz		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		pF
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
Turn-on Rise Time	T_r			75		
Turn-Off Delay Time	$T_{d(off)}$			86		
Turn-Off 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

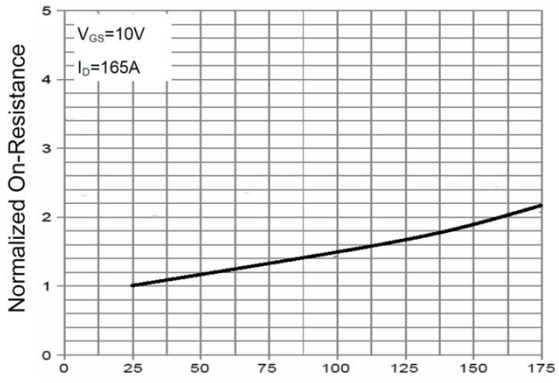
Note:

1. E AS is tested at starting T_j = 25℃, V_{DD} =45V,V_{GS} = 10V,L = 0.1mH, Rg=25Ω;

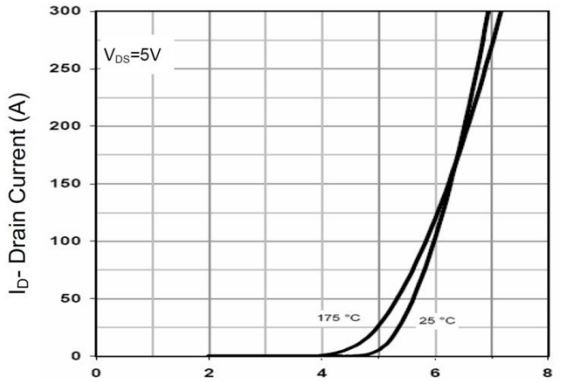
Typical Characteristics



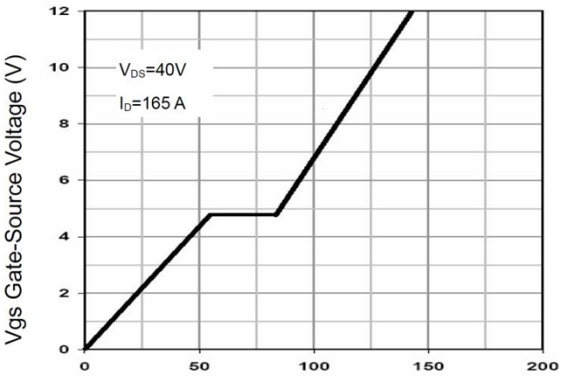
Output Characteristics



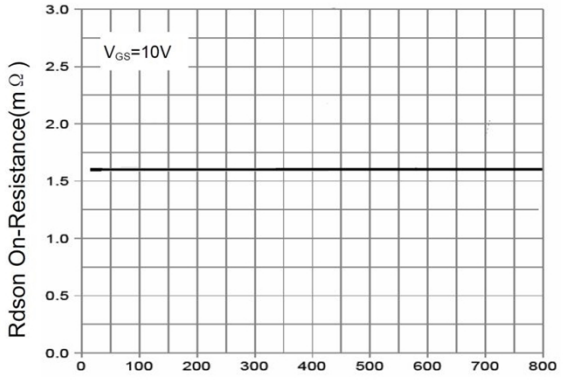
Rdson-Junction Temperature



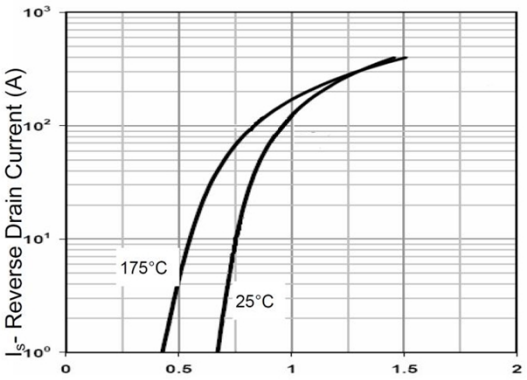
Transfer Characteristics



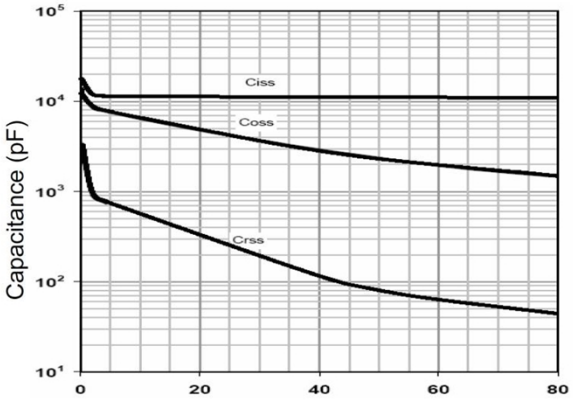
Gate Charge



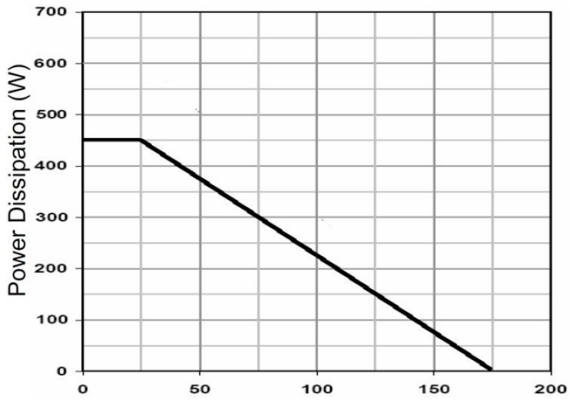
Rdson- Drain Current



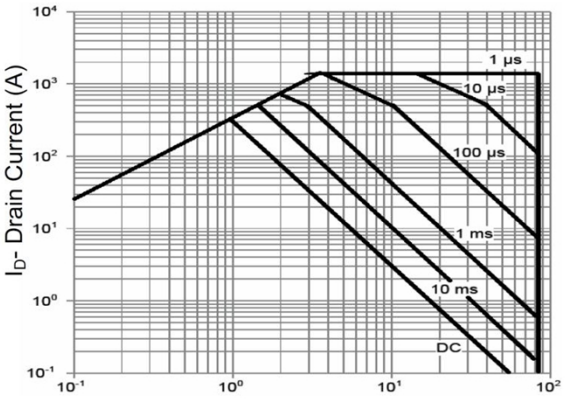
Source- Drain Diode Forward



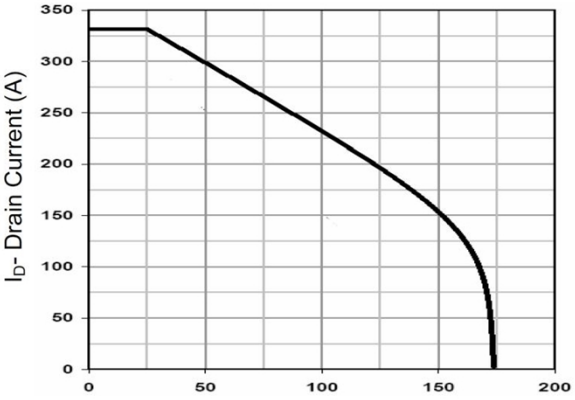
Capacitance vs Vds



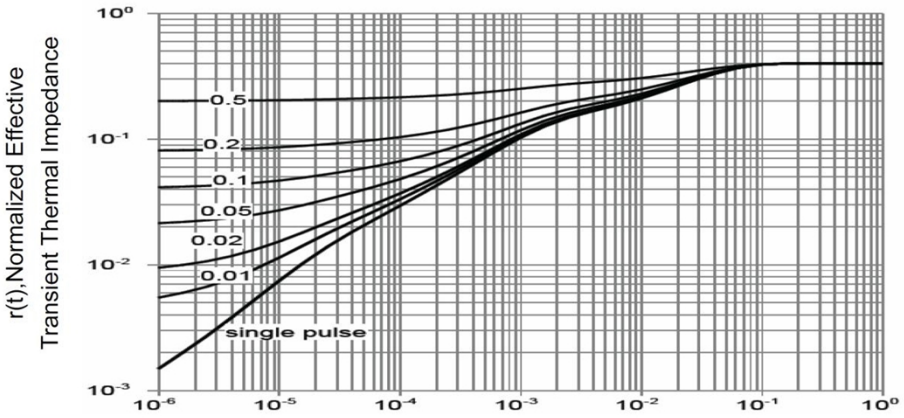
Power De-rating



Safe Operation Area

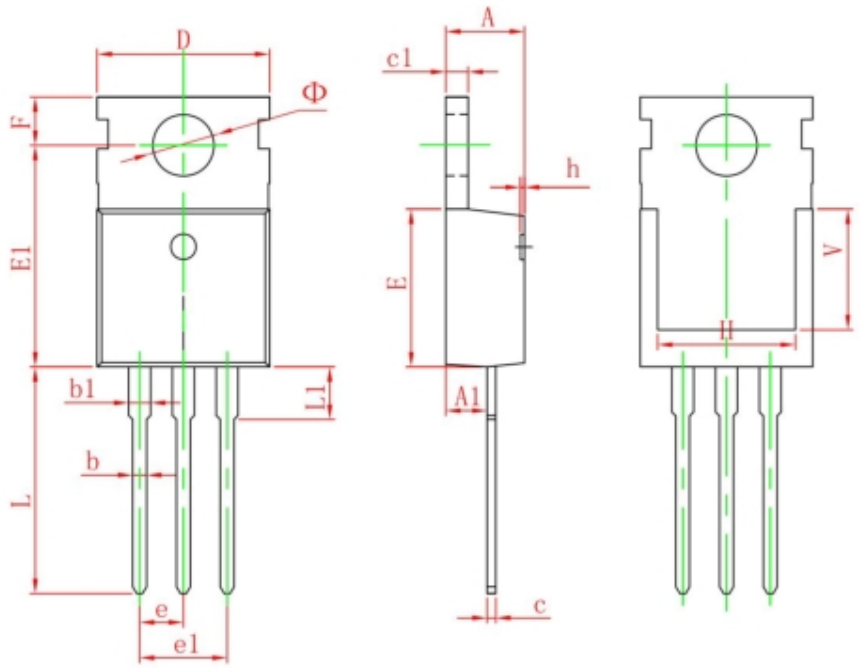


Current De-rating



Normalized Maximum Transient Thermal Impedance

TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150