

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	3.3mΩ@10V	170A

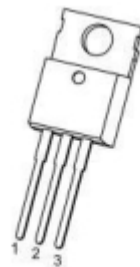
Feature

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

Application

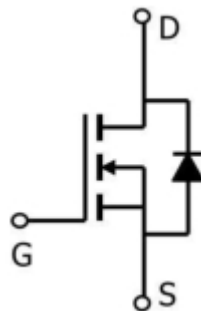
- Power switching application DC-DC Converter
- Power Management

Package

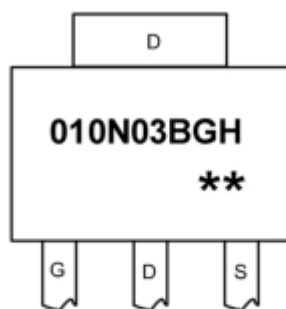


TO-220-3L-C(G:1 D:2 S:3)

Circuit diagram



Marking



010N03BGH : Product code
****** : Week code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	170	A
Pulsed Drain Current	I _{DM}	680	A
Power dissipation(Tc=25°C)	P _D	250	W
Single Pulse Avalanche Energy ¹	E _{AS}	180	mJ
Thermal Resistance Junction-Case	R _{θJC}	0.5	°C/ W
Operation and storage temperature	T _{STG} , T _J	-55~ +150	°C

Electrical characteristics

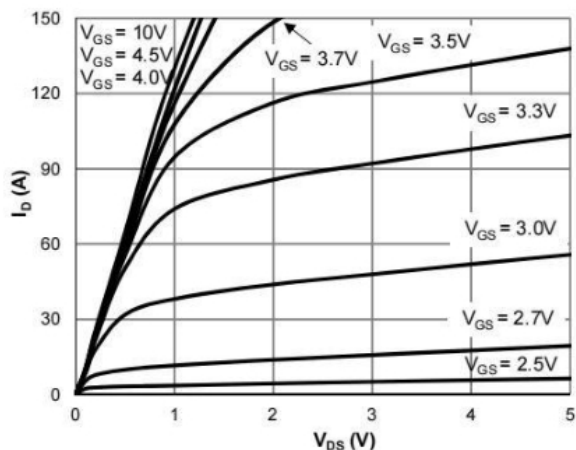
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 80V, V_{GS} = 0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 0.1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	2.7	4	V
Drain-Source on-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		3.3	4.2	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V,$ $f=1MHz$		4660		pF
Output Capacitance	C_{oss}			1208		
Reverse Transfer Capacitance	C_{rss}			28		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V,$ $I_D=20A$		79		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			25		
Turn-On Delay Time	$T_{d(on)}$	$V_{GS}=10V, V_{DS}=50V,$ $R_L=2.5\Omega, R_G=6.0\Omega$		12		nS
Rise Time	T_r			23		
Turn-Off Delay Time	$T_{d(off)}$			85		
Fall Time	T_f			62		
Diode Characteristics						
Diode Forward Voltage2	V_{SD}	$V_{GS}=0V, I_S=1A$			1.2	V

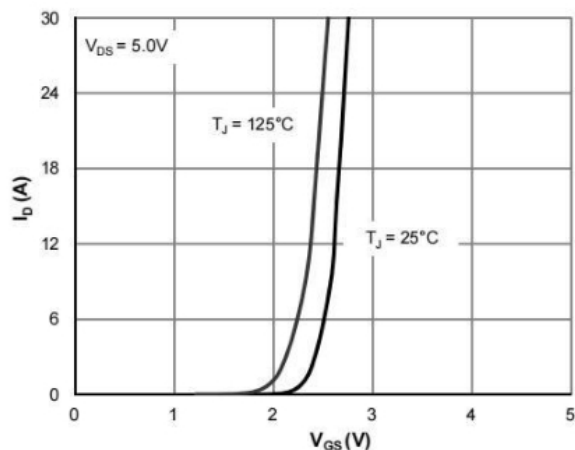
Notes:

1. E AS is tested at starting $T_j = 25^{\circ}\text{C}$, $V_{DD} = 50V, V_{GS} = 10V, L = 0.1mH, R_g = 25m\Omega$;

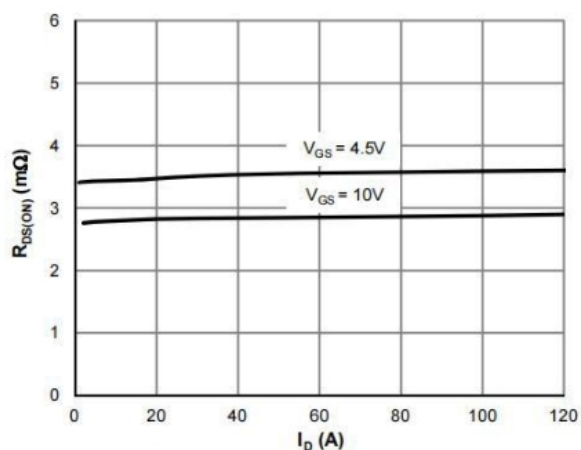
Typical Characteristics



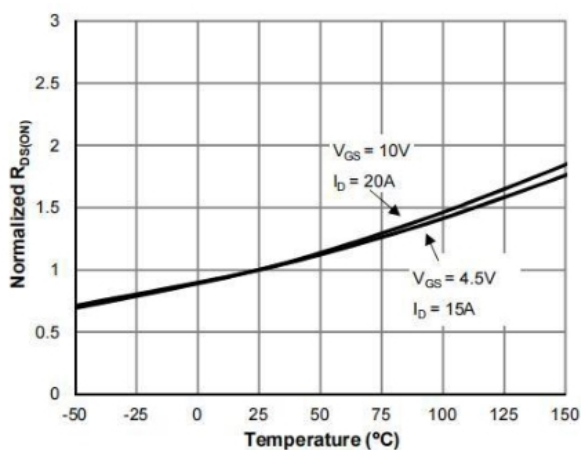
Typical Output Characteristics



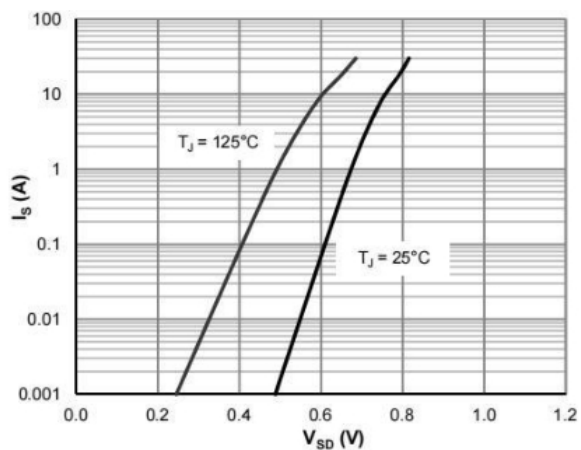
Transfer Characteristics



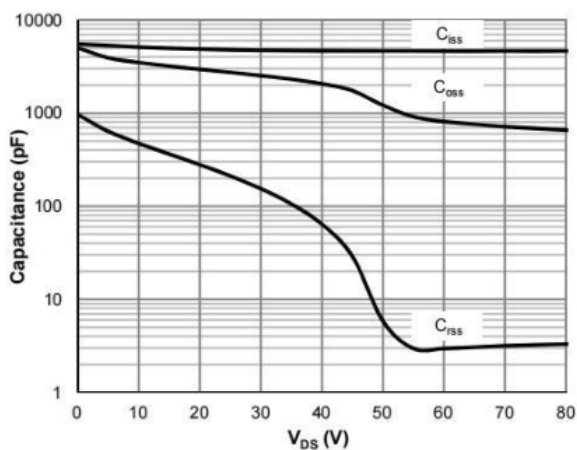
On-Resistance vs. Drain Current



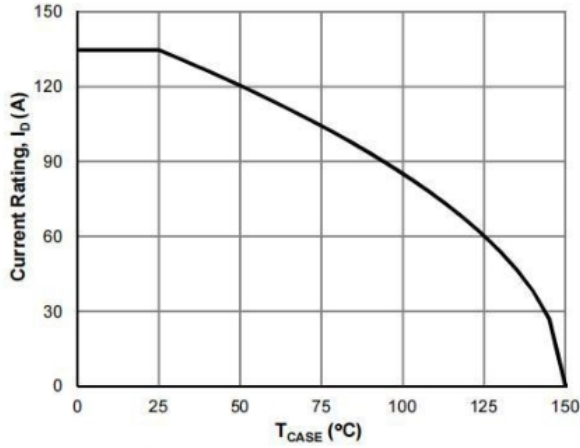
On-Resistance vs. Junction Temperature



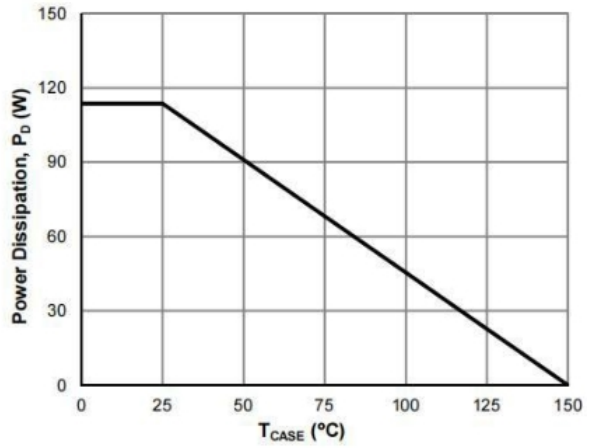
Body-Diode Characteristics



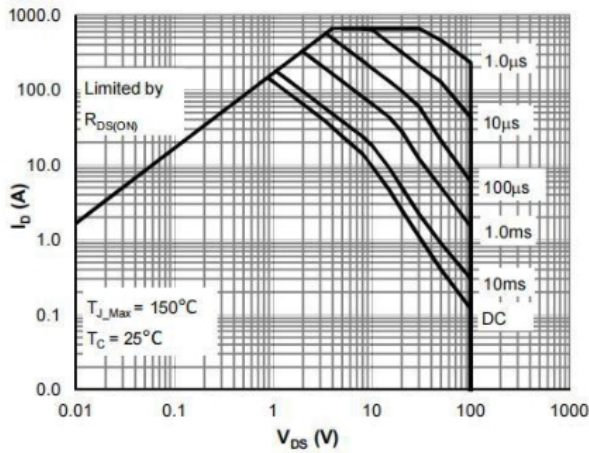
Capacitance Characteristics



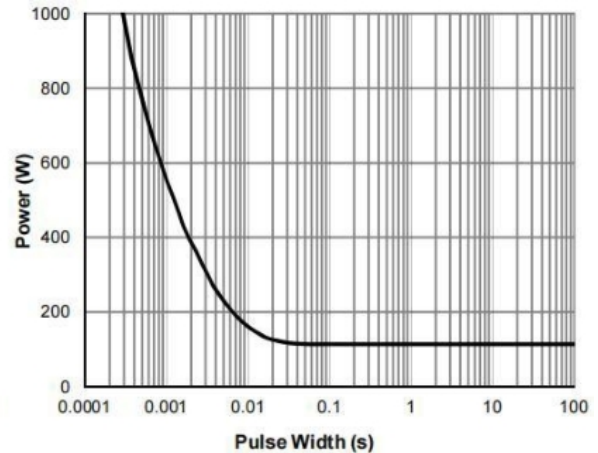
Current De-rating



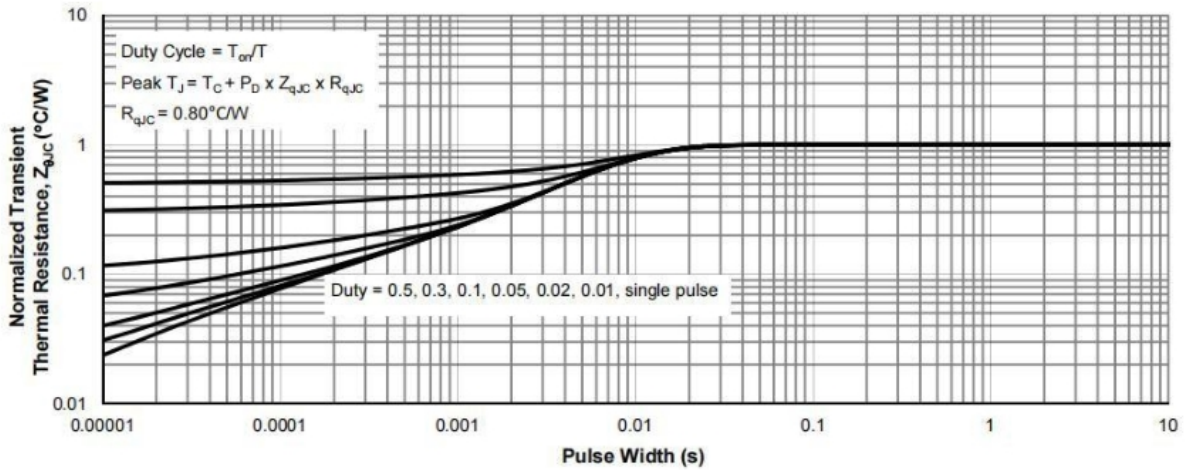
Power De-rating



Maximum Safe Operating Area

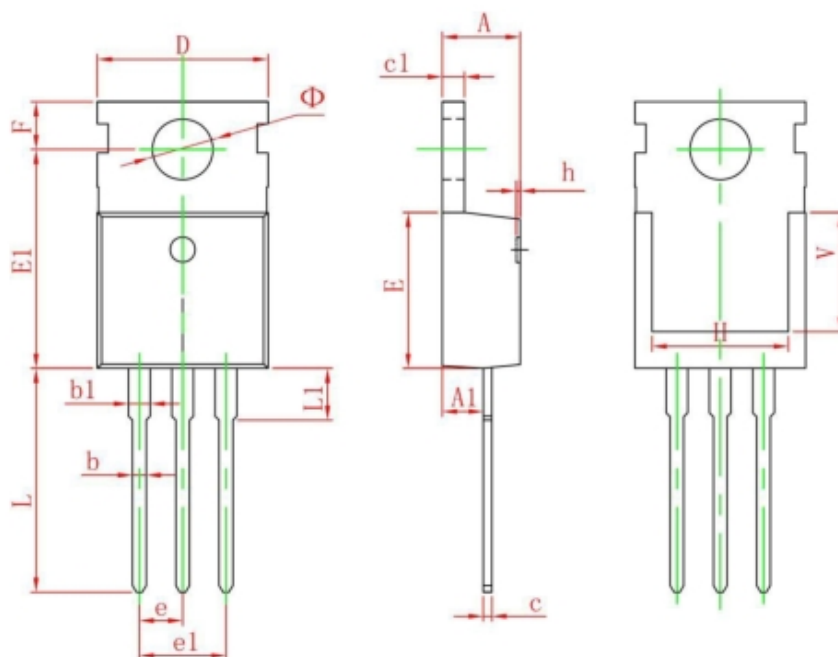


Single Pulse Power Rating, Junction-to-Case



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