

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	2.7mΩ@10V	220A

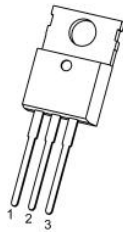
### Feature

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

### Applications

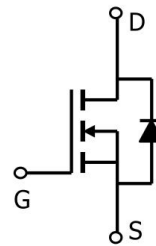
- PWM Application
- Hard switched and high frequency circuits
- Power Management

### Package

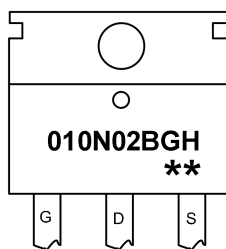


TO-220-3L-C(1:G 2:D 3:S)

### Circuit diagram



### Marking



010N02BGH      =Device Code  
\*\*                 =Week Code

**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C)	$I_D$	220	A
Pulsed Drain Current	$I_{DM}$	880	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	1458	mJ
Total Power Dissipation <sup>2</sup> (Tc=25°C)	$P_D$	300	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.41	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range	$T_J$	-55 to 150	°C

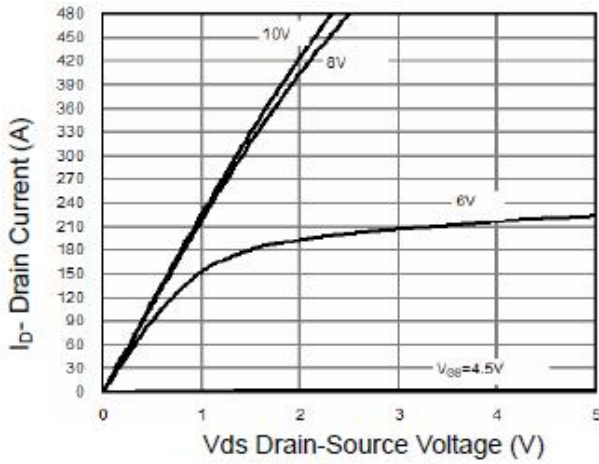
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$	---	---	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.7	3.2	4.3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=125A$	---	2.7	3.5	m $\Omega$
<b>Dynamic characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	---	11531	---	pF
Output Capacitance	$C_{oss}$		---	1489	---	
Reverse Transfer Capacitance	$C_{rss}$		---	72	---	
<b>Switching Characteristics</b>						
Total Gate Charge (4.5V)	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=125A$	---	158	---	nC
Gate-Source Charge	$Q_{gs}$		---	51	---	
Gate-Drain Charge	$Q_{gd}$		---	27	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=1.6\Omega, I_D=125A$	---	25	---	ns
Rise Time	$T_r$		---	75	---	
Turn-Off Delay Time	$T_{d(off)}$		---	89	---	
Fall Time	$T_f$		---	29	---	
<b>Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	---	---	1.2	V

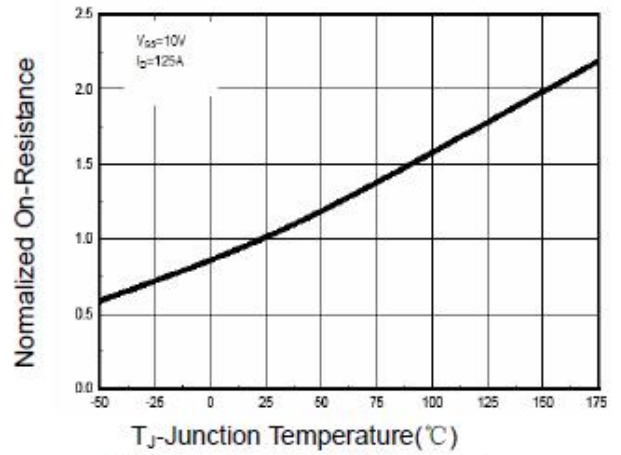
**Note :**

- The EAS data shows Max. rating . The test condition is  $V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$
- The power dissipation is limited by 150°C junction temperature

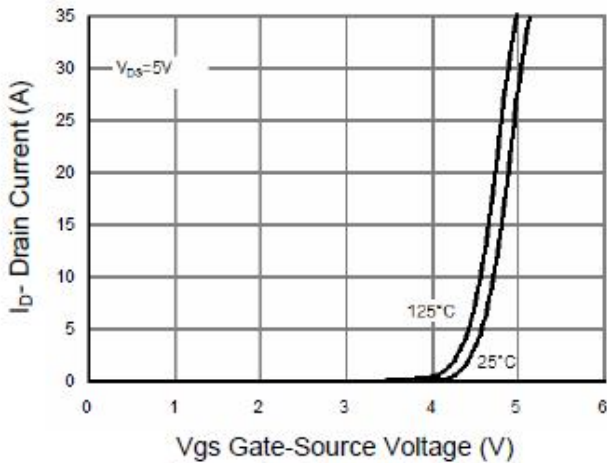
**Typical Characteristics**



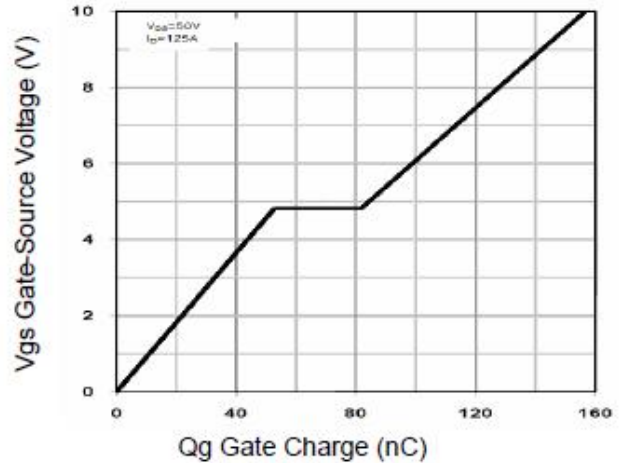
**Output Characteristics**



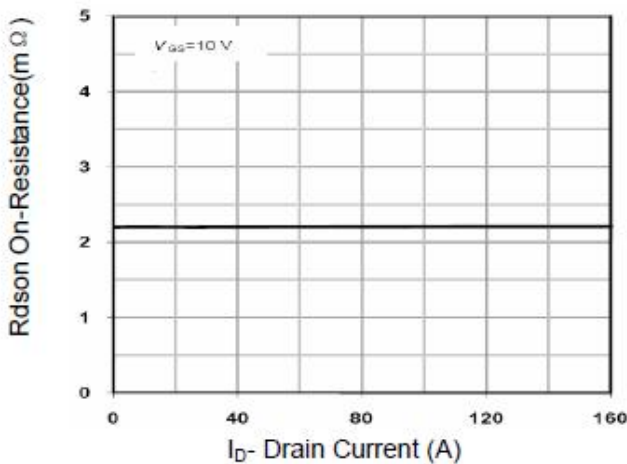
**Rdson-Junction Temperature**



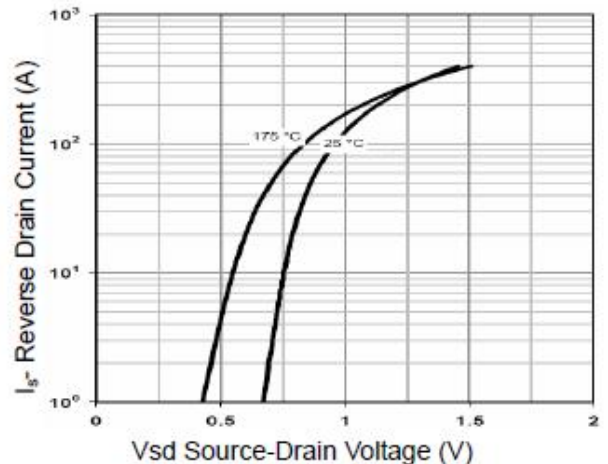
**Transfer Characteristics**



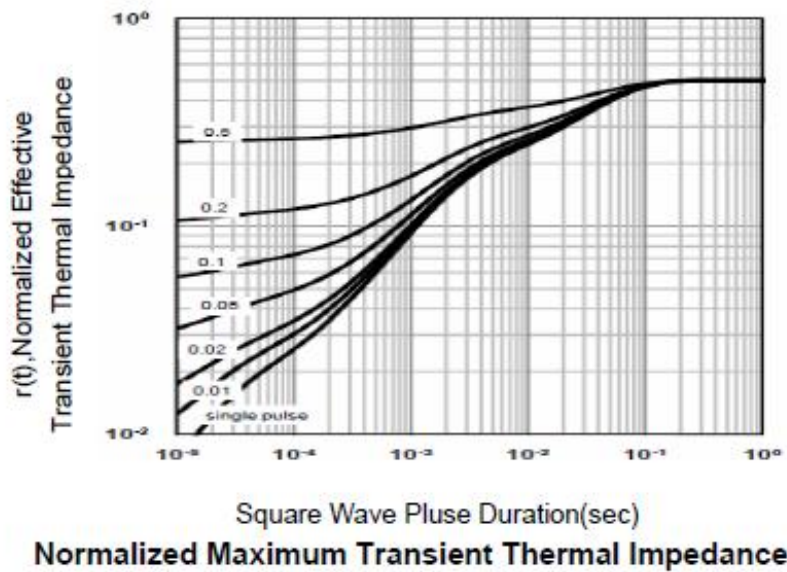
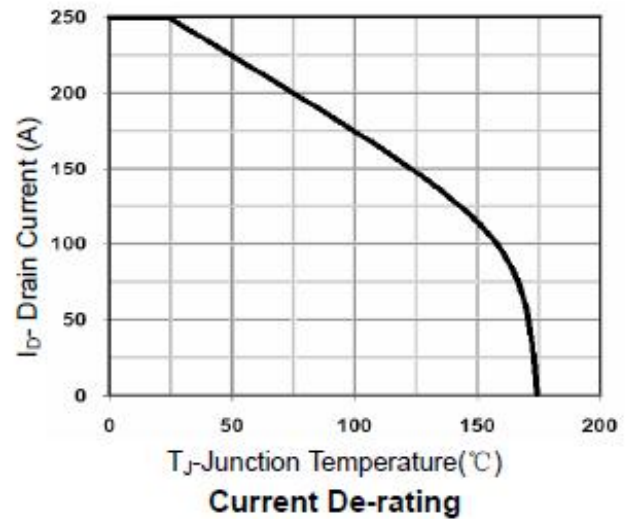
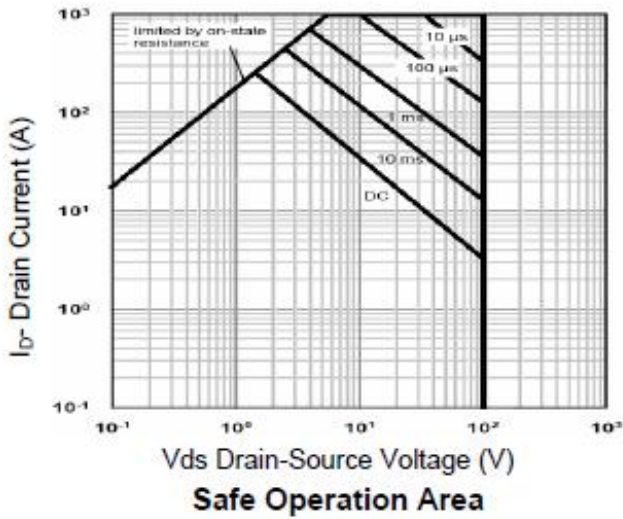
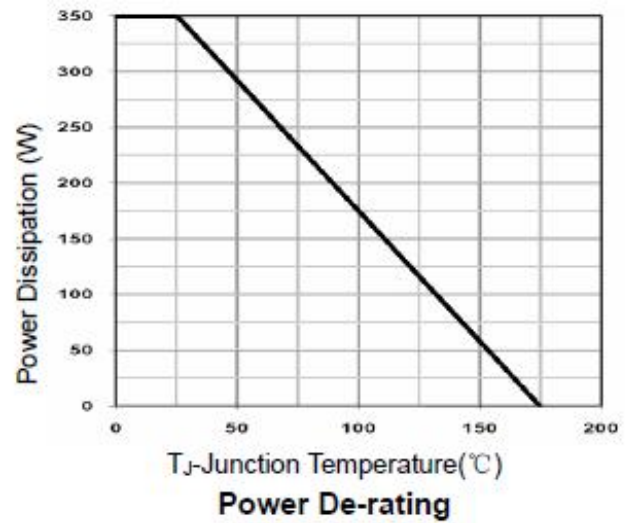
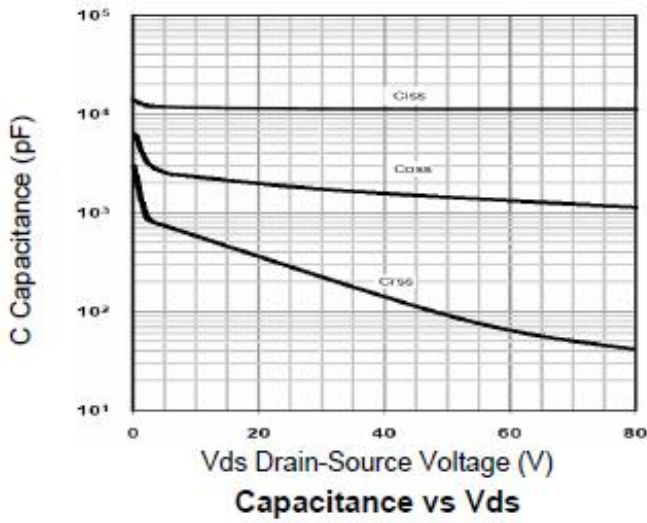
**Gate Charge**



**Rdson- Drain Current**

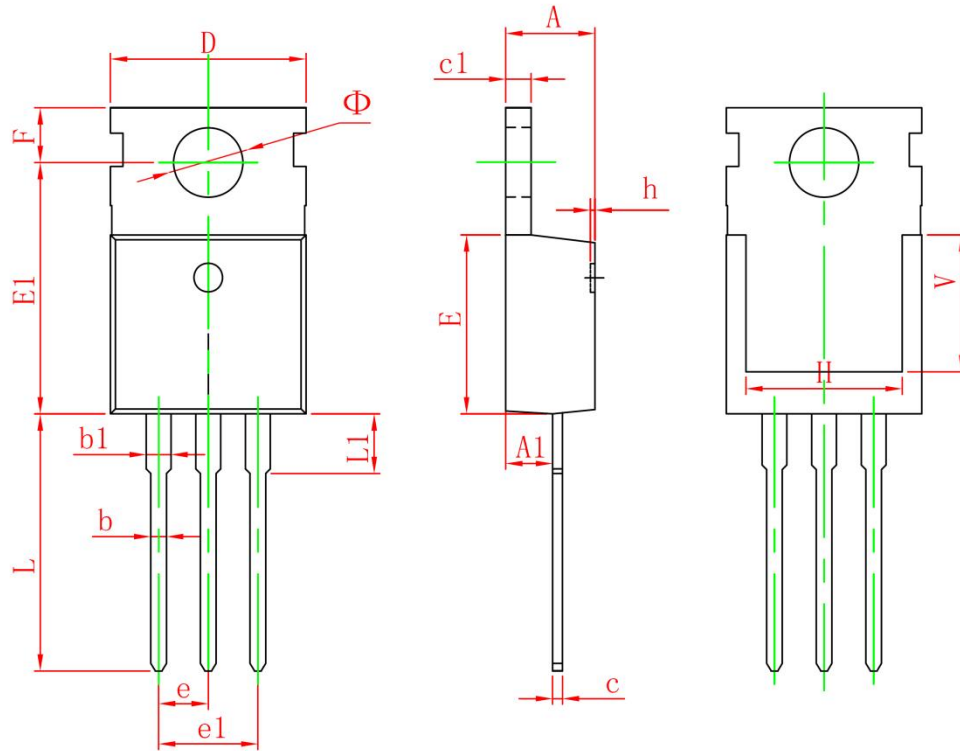


**Source- Drain Diode Forward**





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

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