

Product Summary

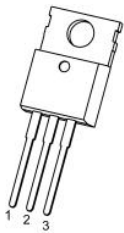
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.0mΩ@10V	220A

Feature

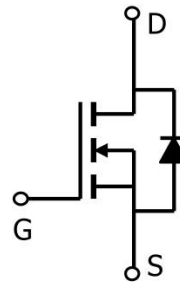
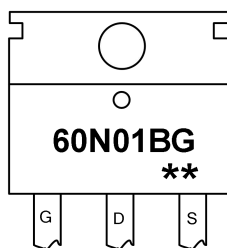
- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications

- Charger
- Battery management
- Power Switching application

Package


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

Circuit diagram

Marking


60N01BG =Device Code
****** =Week Code

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹ (Tc=25°C,Package limit)	I _D	220	A
Continuous Drain Current ¹ (Tc=25°C,Silicon limit)	I _D	330	A
Pulsed Drain Current ²	I _{DM}	880	A
Single Pulse Avalanche Energy ³	E _{AS}	1600	mJ
Total Power Dissipation ⁴ (Tc=25°C)	P _D	203	W
Thermal Resistance Junction-Case ¹	R _{θJC}	0.61	°C/W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

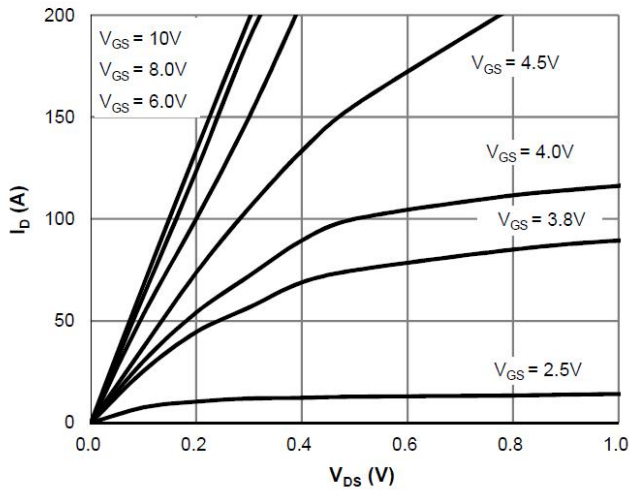
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	60	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =48V , V _{GS} =0V	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V , I _D =30A	---	2.0	2.5	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	6649	---	pF
Output Capacitance	C _{oss}		---	1281	---	
Reverse Transfer Capacitance	C _{rss}		---	57.4	---	
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =48V , V _{GS} =10V , I _D =30A	---	105	---	nC
Gate-Source Charge	Q _{gs}		---	20	---	
Gate-Drain Charge	Q _{gd}		---	18	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =48V , V _{GS} =10V , R _G =2Ω, I _D =30A	---	32.3	---	ns
Rise Time	T _r		---	52.1	---	
Turn-Off Delay Time	T _{d(off)}		---	91	---	
Fall Time	T _f		---	27.8	---	
Diode Characteristics						
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	1.2	V

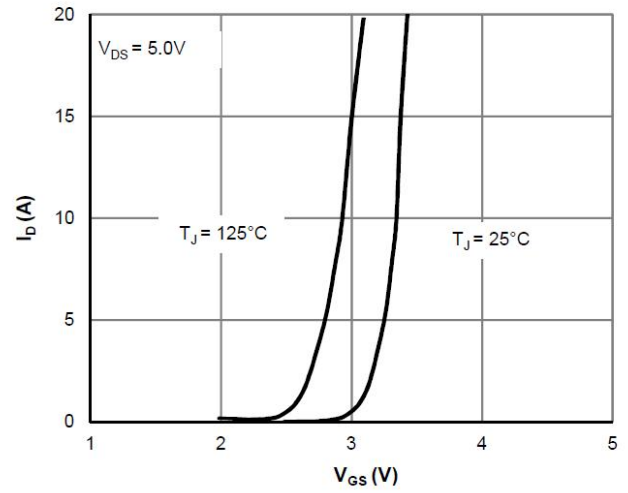
Note :

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
- The EAS data shows Max. rating . The test condition is V_{DD}=45V,V_{GS}=10V,L=0.5mH,R_G=25Ω

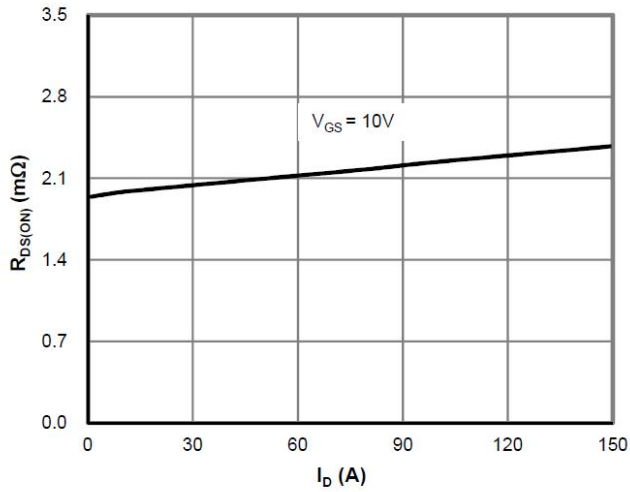
Typical Characteristics



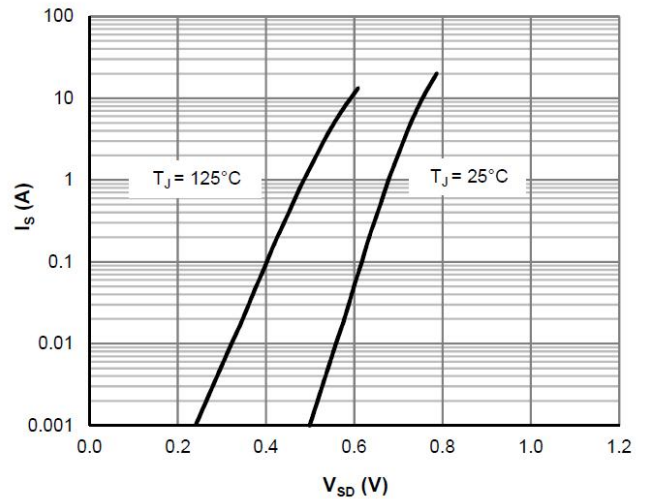
Saturation Characteristics



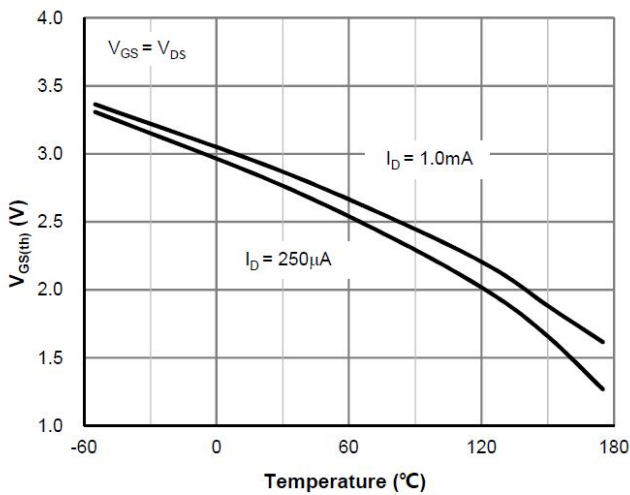
Transfer Characteristics



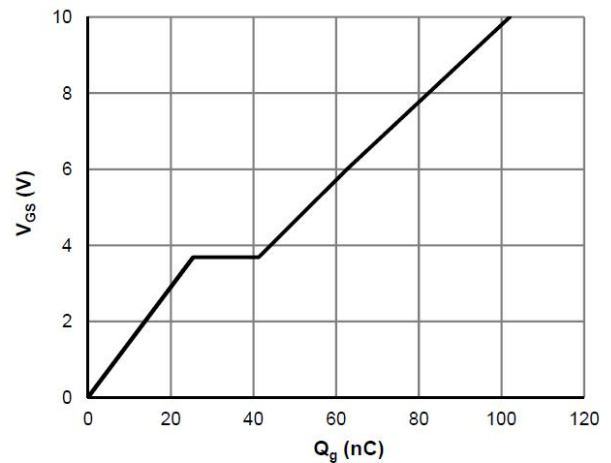
$R_{DS(ON)}$ vs. Drain Current



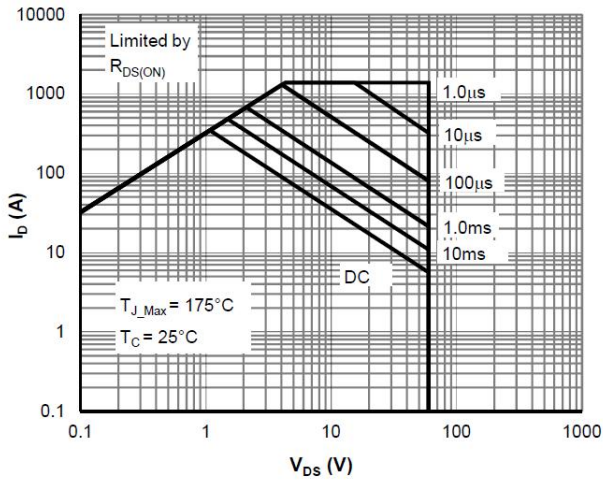
Body-Diode Characteristics



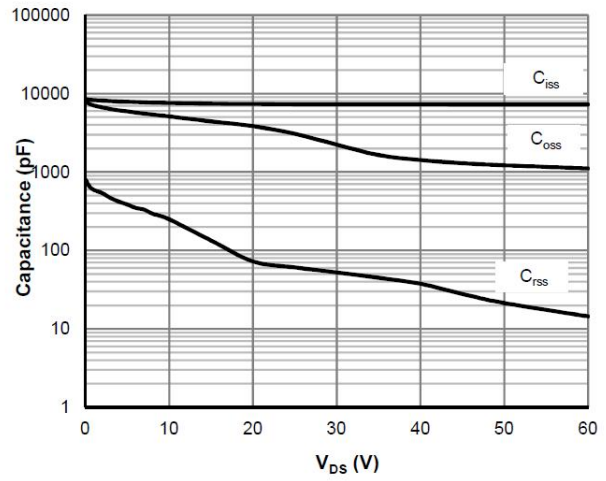
$V_{GS(th)}$ vs. Junction Temperature



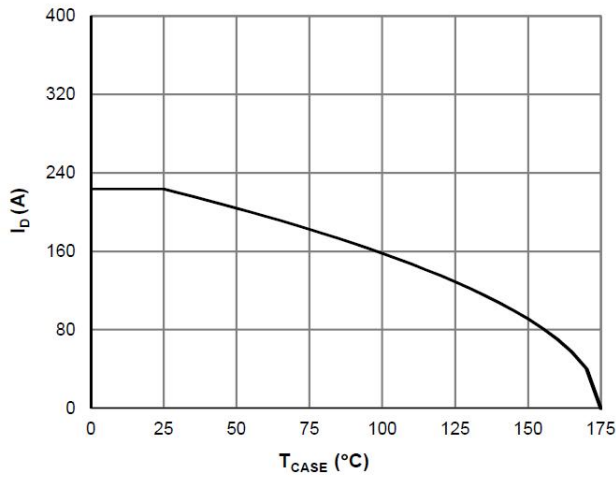
Gate Charge



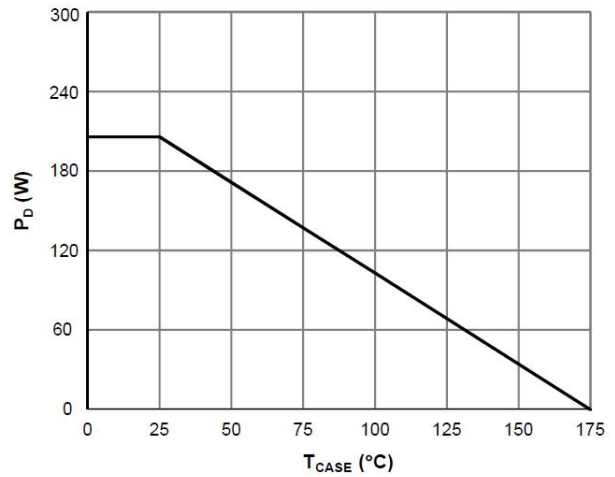
Maximum Safe Operating Area



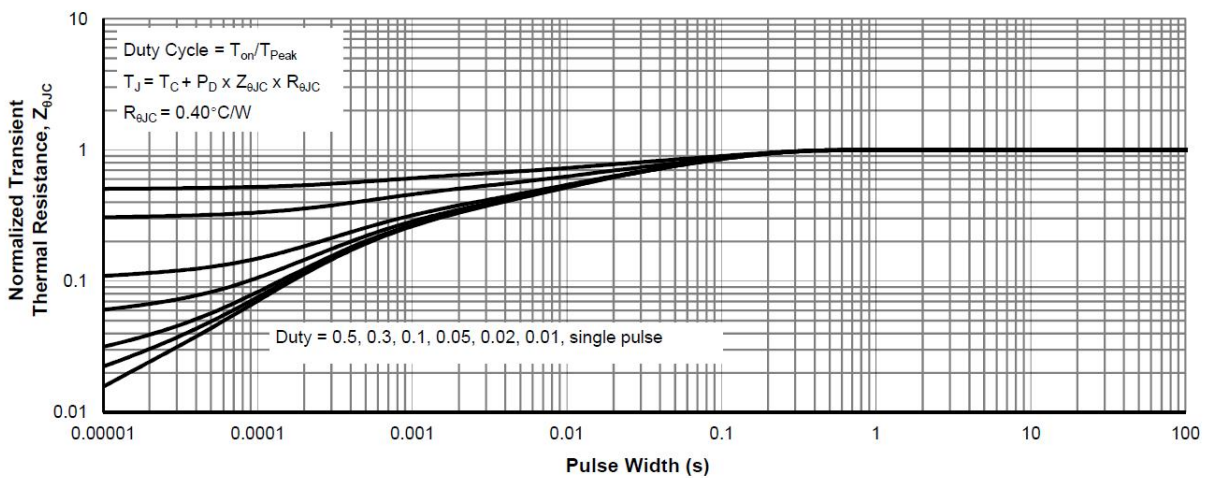
Capacitance Characteristics



Current De-rating



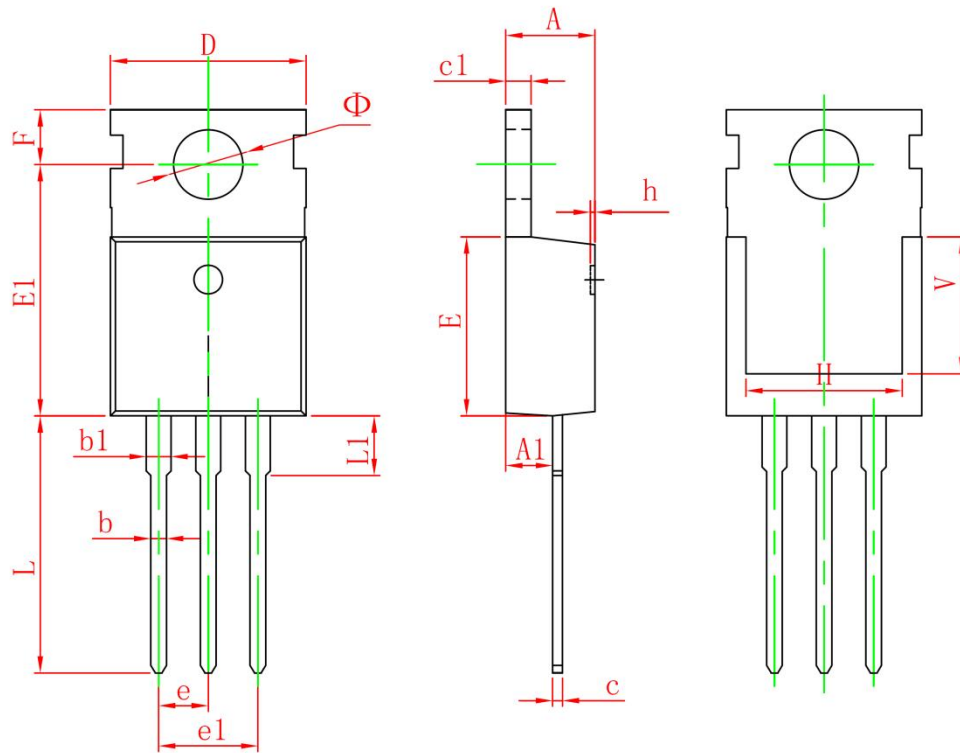
Power De-rating



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



制 修 订 记 录

文件版本	制修日期	修订页次	修订人	变更内容	
1.0	2024/03/06		陈志鹏	规格书建立	
批准		审核		编制	
日期		日期		日期	

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