

Product Summary

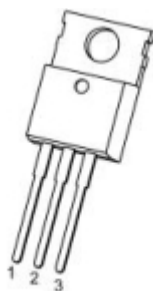
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	3.7mΩ@10V	140A
	4.6mΩ@4.5V	

Feature

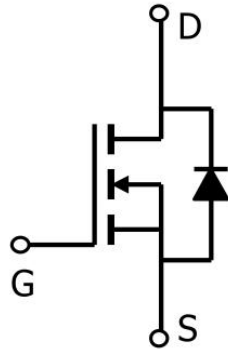
- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

- DC-DC Converters
- Power Management

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

Circuit diagram



Marking



60N03G =Device Code
****** =Week Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹ (T _c =25°C)	I _D	140	A
Pulsed Drain Current ²	I _{DM}	560	A
Single Pulse Avalanche Energy ³	E _{AS}	961	mJ
Total Power Dissipation ⁴ (T _c =25°C)	P _D	140	W
Thermal Resistance Junction-Case ¹	R _{θJC}	0.89	°C/ W
Storage Temperature Range	T _{STG}	-55~ +150	°C
Operating Junction Temperature Range	T _J	-55~ +150	°C

Electrical characteristics

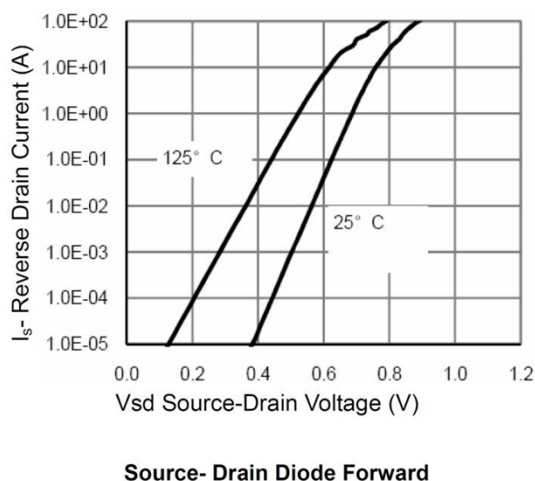
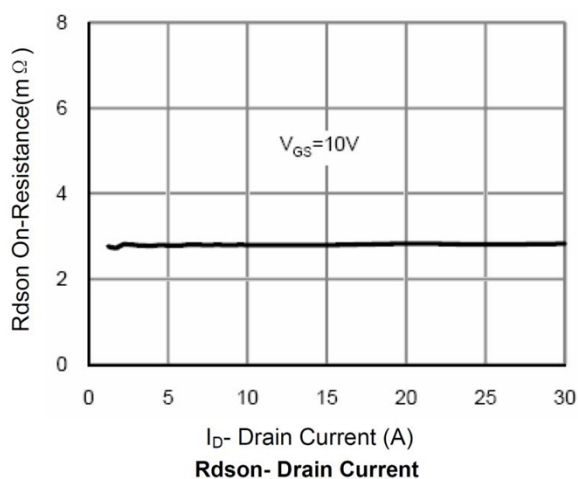
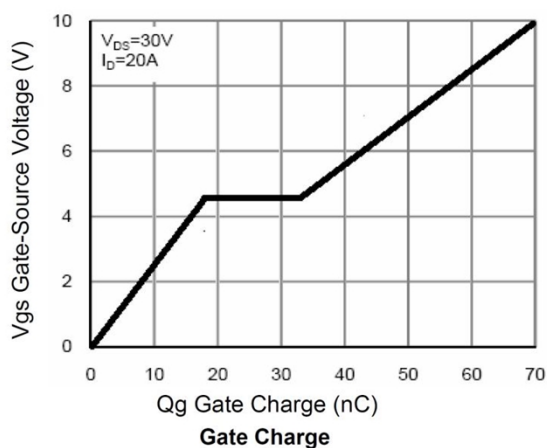
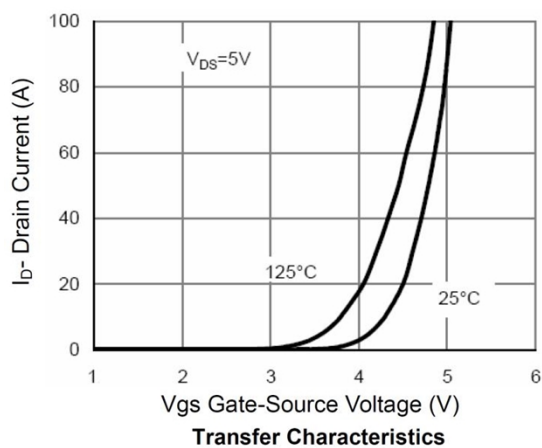
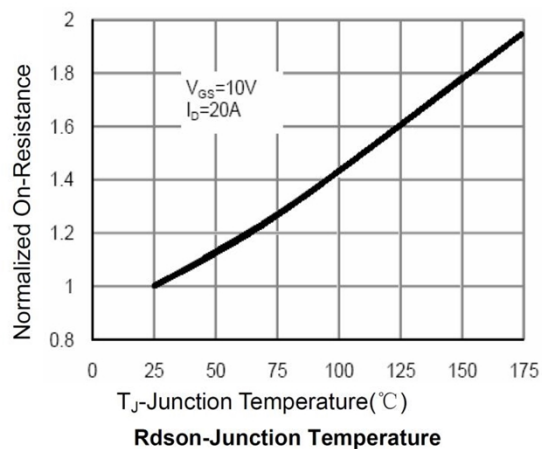
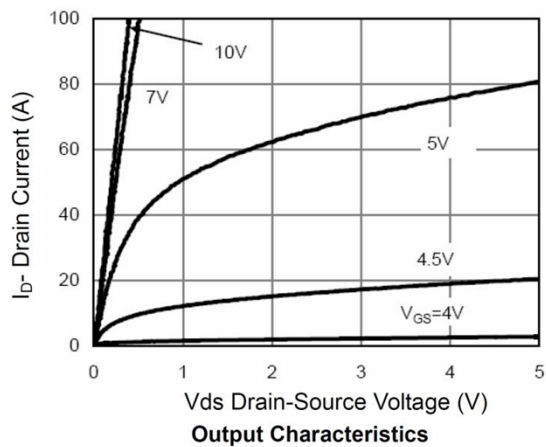
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

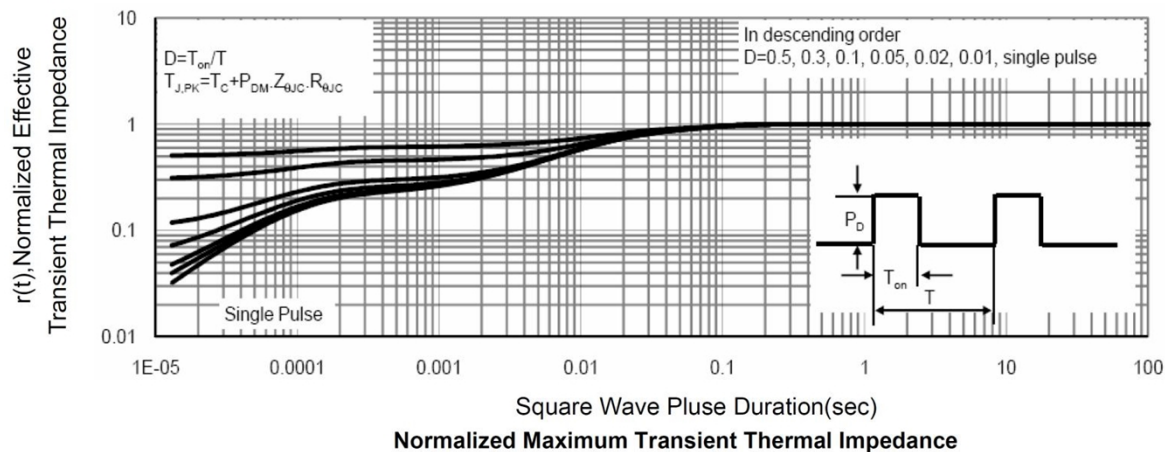
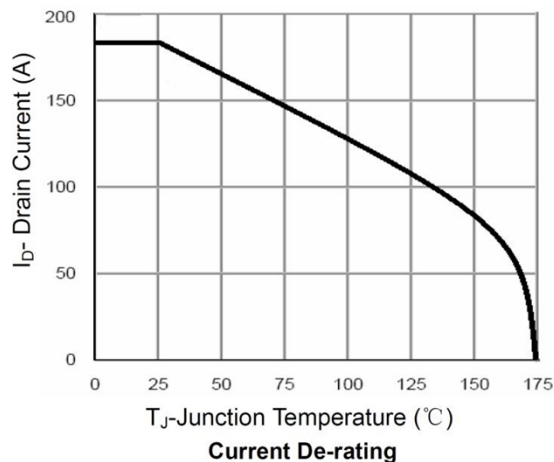
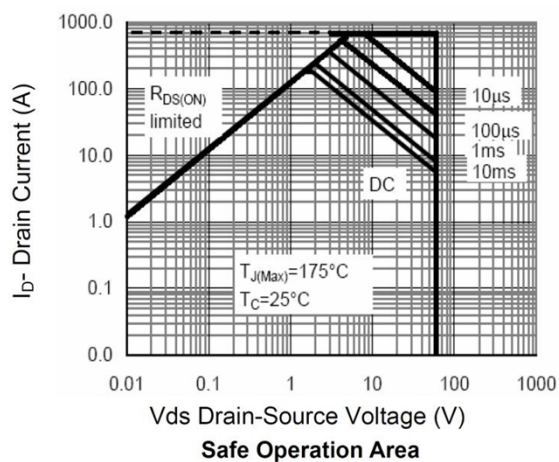
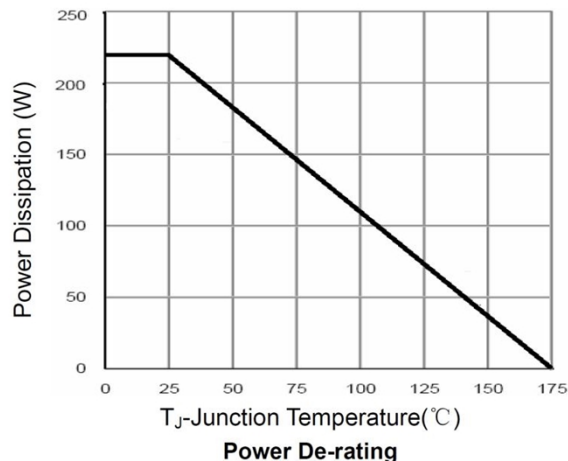
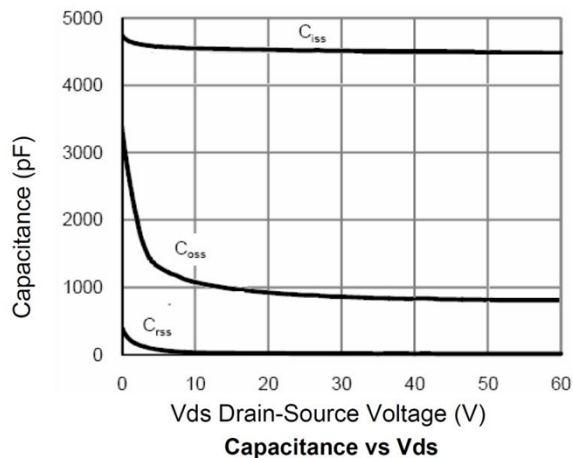
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	60			V
Drain-source leakage current	I _{DSS}	V _{DS} =48V,V _{GS} = 0V			1	uA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V,V _{DS} = 0V			±100	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.7	2.5	V
Static Drain-Source On-Resistance ²	R _{DS(on)}	V _{GS} =10V, I _D =20A		3.7	4.7	mΩ
		V _{GS} =4.5V, I _D =20A		4.6	6.2	
Dynamic Characteristics						
Input capacitance	C _{iSS}	V _{DS} =30V, V _{GS} =0V, f=1MHz		4250		pF
Output capacitance	C _{OSS}			975		
Reverse transfer capacitance	C _{rSS}			41		
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =30V , V _{GS} =10V, I _D =20A		68		pF
Gate-Source Charge	Q _{gs}			19		
Gate-Drain Charge	Q _{gd}			14		
Turn-on delay time	T _{d(on)}	V _{DD} =30V,V _{GS} =10V, R _G =4.7Ω, I _D =20A		6		nS
Rise time	T _r			12		
Turn-off delay time	T _{d(off)}			24		
Fall time	T _f			5		
Diode Characteristics						
Diode forward voltage ²	V _{SD}	V _{GS} =0V ,I _S =1A,T _J =25℃			1.2	V

Note :

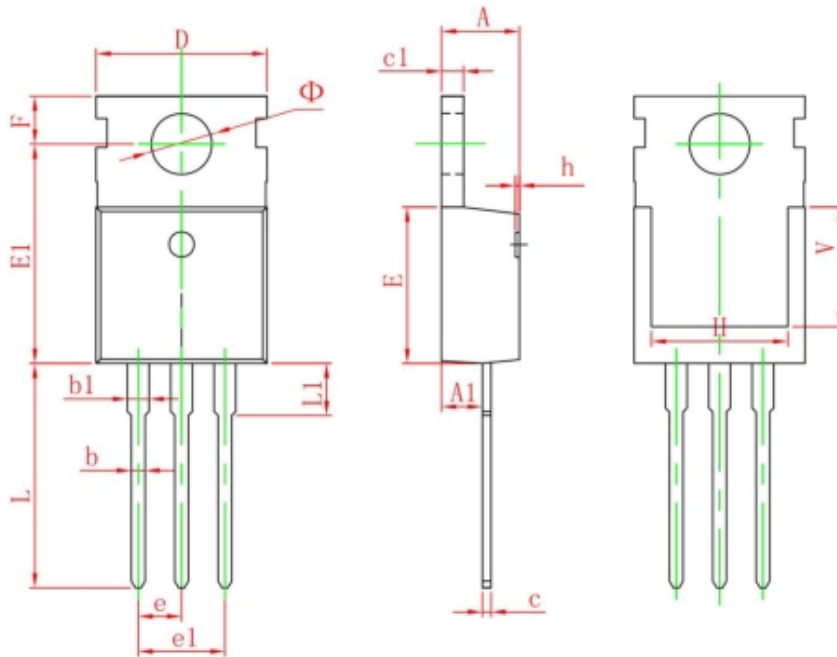
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics





TO-220-3L 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