

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	3.3mΩ@10V	140A
	4.2mΩ@4.5V	

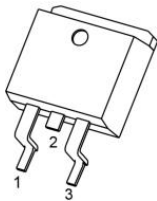
Feature

- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

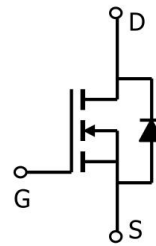
- DC-DC Converters
- Power Management

Package

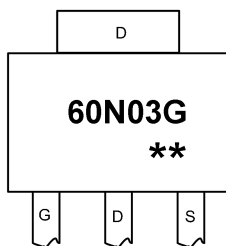


TO-263(G:1 D:2 S:3)

Circuit diagram



Marking



60N03G =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)	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 (Tc=25°C)	P _D	140	W
Thermal Resistance Junction-Case ¹	R _{θJC}	0.89	°C/W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

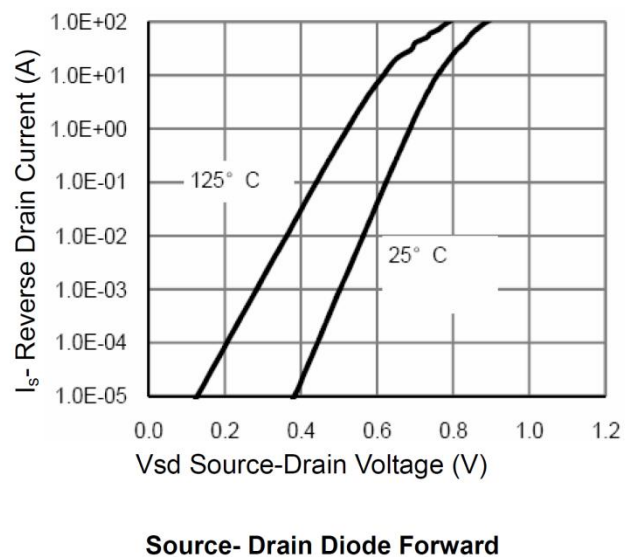
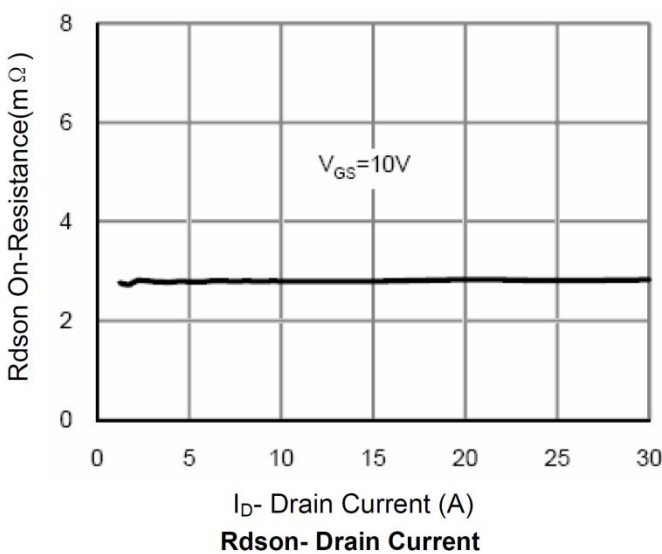
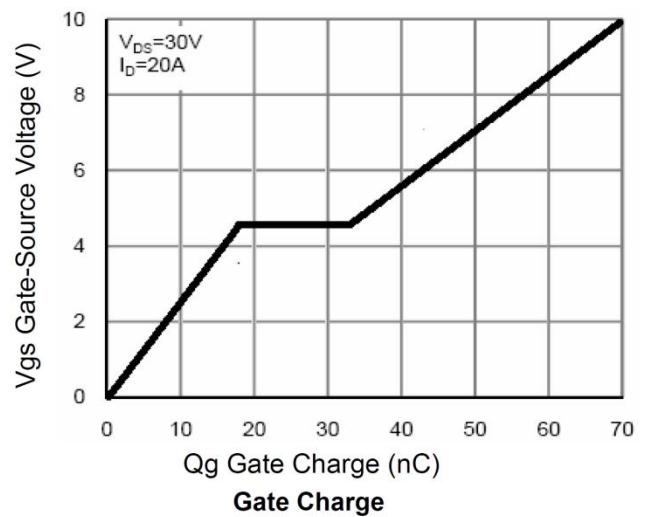
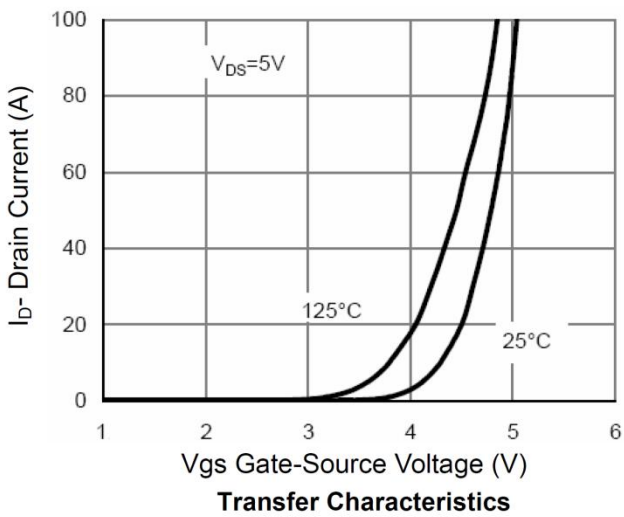
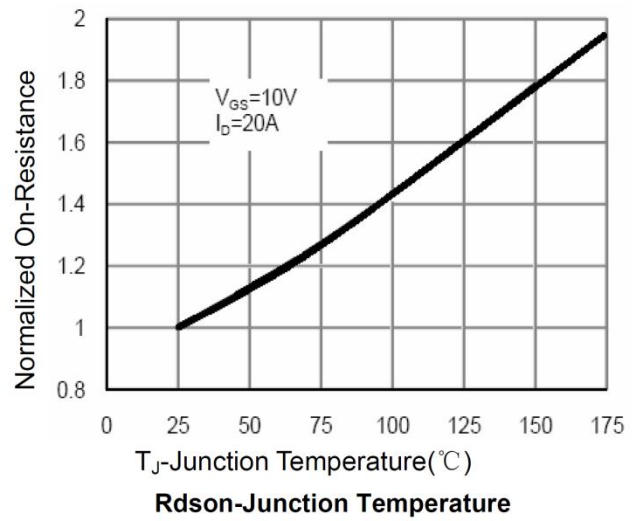
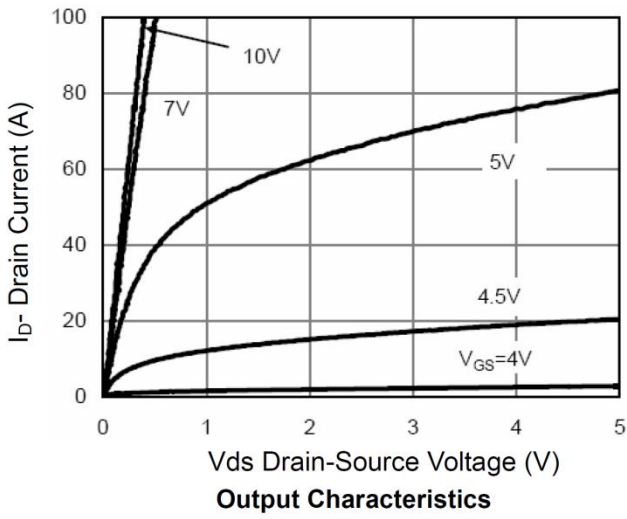
Electrical characteristics (Ta=25°C, unless otherwise noted)

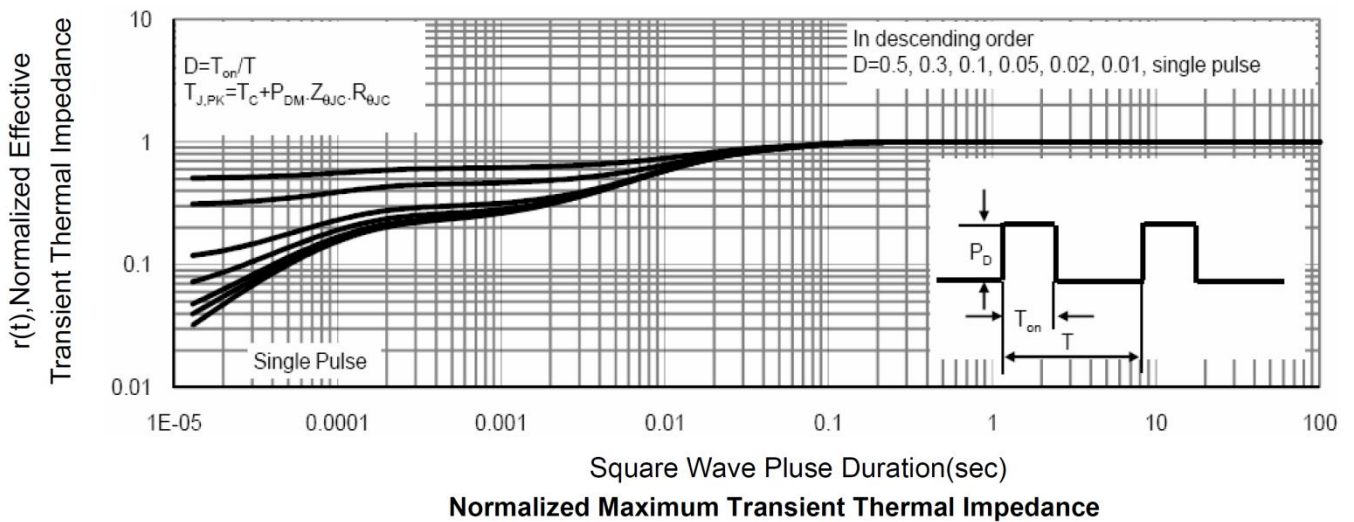
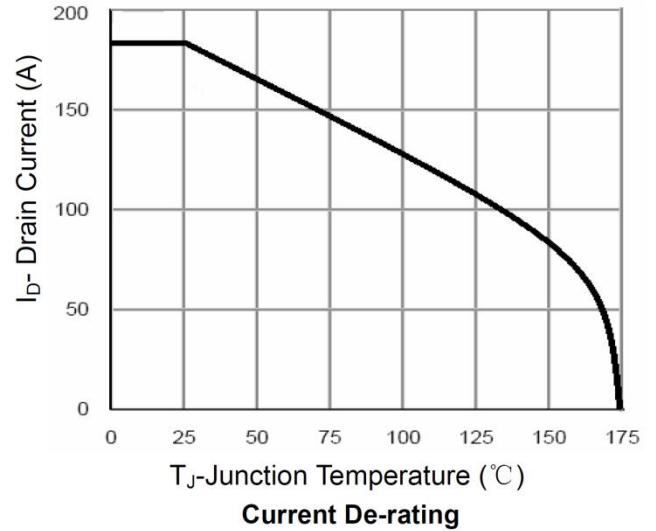
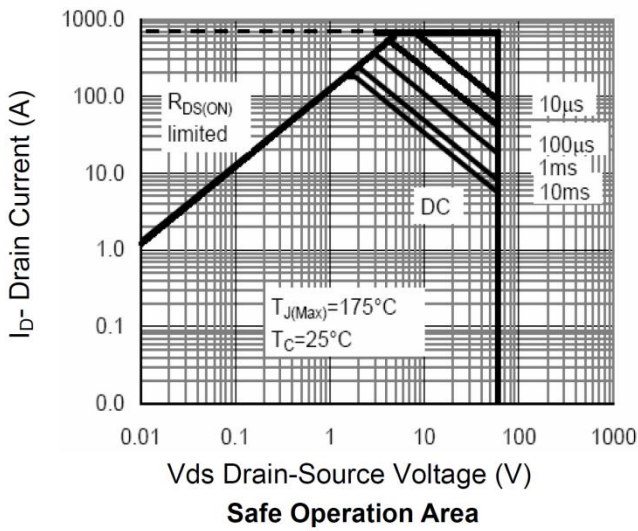
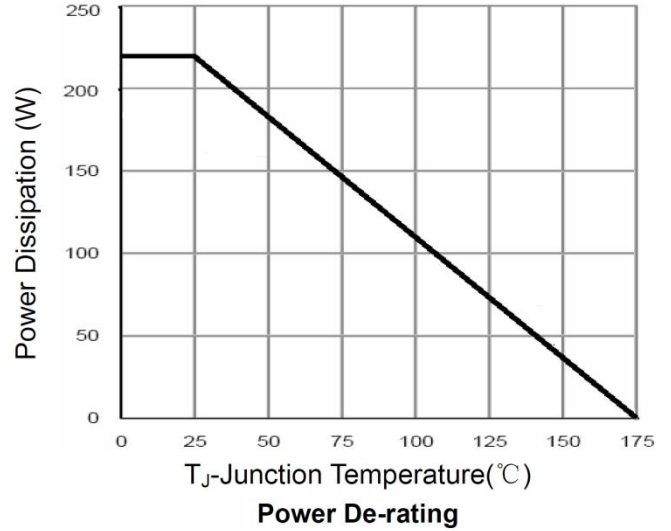
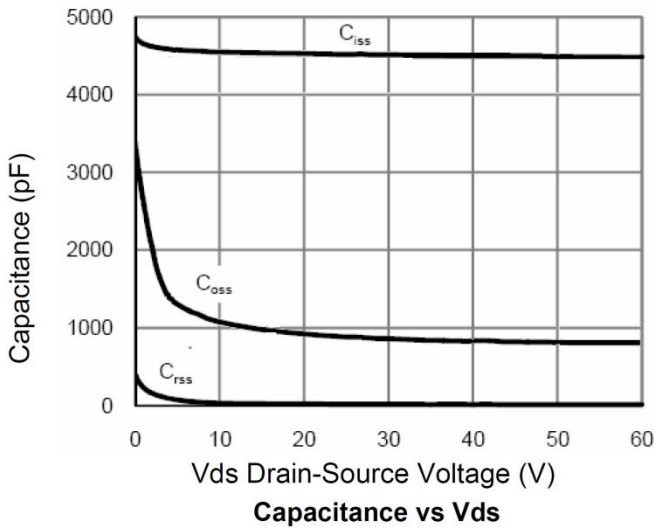
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	60	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =48V , V _{GS} =0V	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.7	2.5	V
Static Drain-Source On-Resistance ²	R _{DS(on)}	V _{GS} =10V , I _D =20A	---	3.3	4.2	mΩ
		V _{GS} =4.5V , I _D =20A	---	4.2	5.6	mΩ
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	---	nC
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°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}=30V,V_{GS}=10V,L=0.5mH,R_G=25Ω
- The power dissipation is limited by 150°C junction temperature
- The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

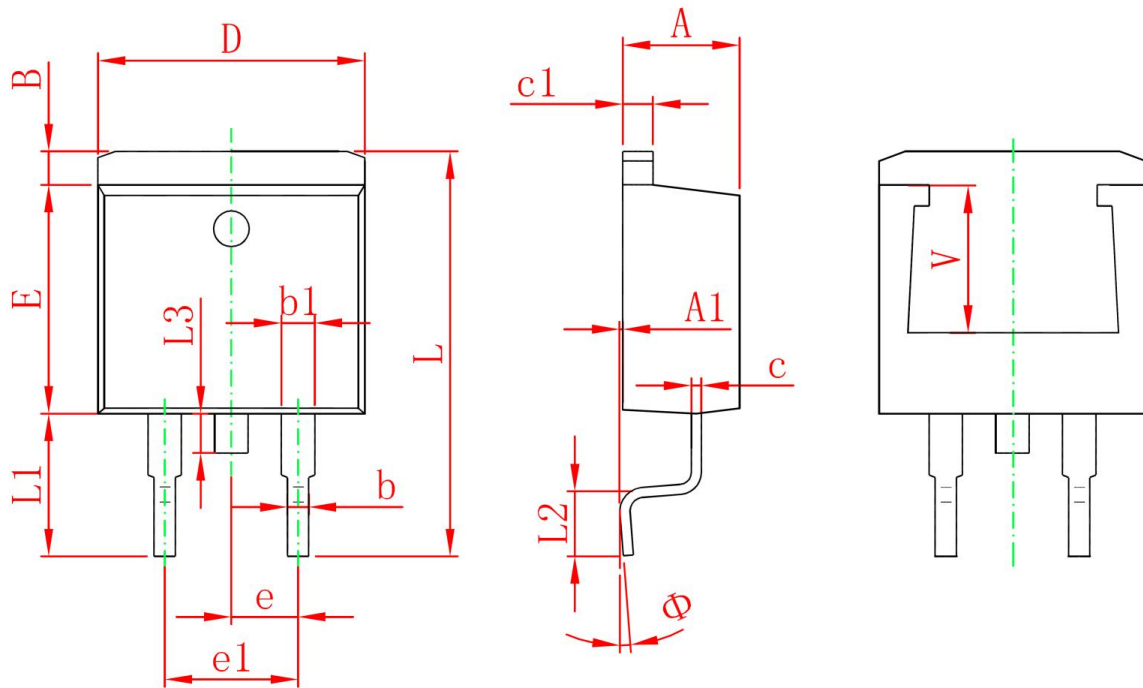
Typical Characteristics







TO-263 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
phi	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	

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