Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	3.3mΩ@10V	140A
	1.2mΩ@4.5V	

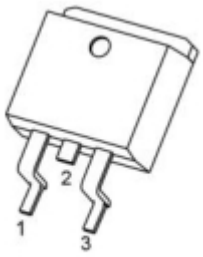
Feature

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

Applications

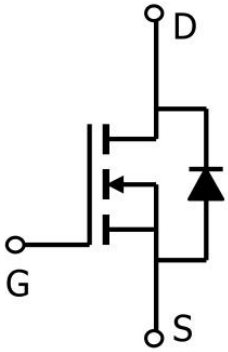
- DC-DC Converters
- Power Management

Package

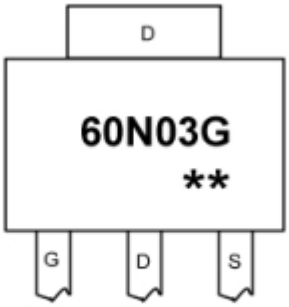


TO-263(G:1 D:2 S:3)

Circuit diagram



Marking



60N03G =Device Code
** =Week Code

Absolute maximum ratings

(T_a=25℃ 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] (Tc=25℃)	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℃)	P_D	140	W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	0.89	℃/ W
Storage Temperature Range	T_{STG}	-55~ +150	℃
Operating Junction Temperature Range	T_J	-55~ +150	℃

Electrical characteristics

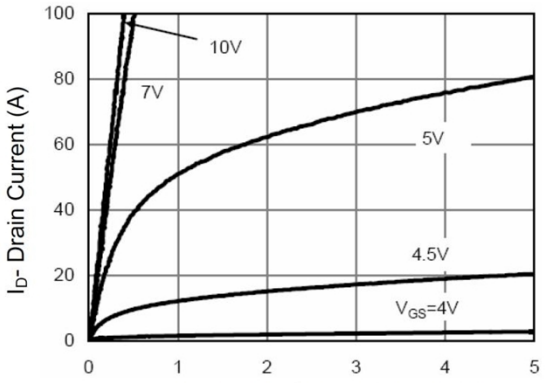
(T_A=25℃, unless otherwise noted)

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
Drain-Source On-State 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	
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

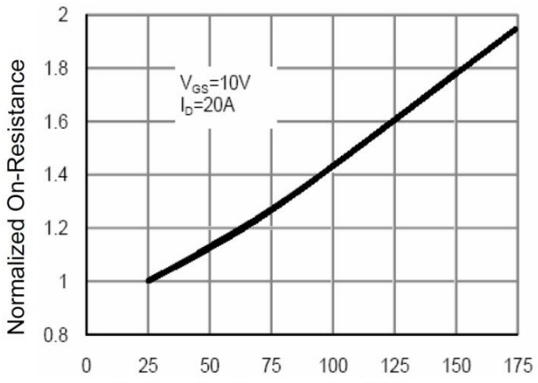
Note :

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 ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is V_{DD}=30V,V_{GS}=10V,L=0.5mH,R_G=25Ω
4. The power dissipation is limited by 150℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

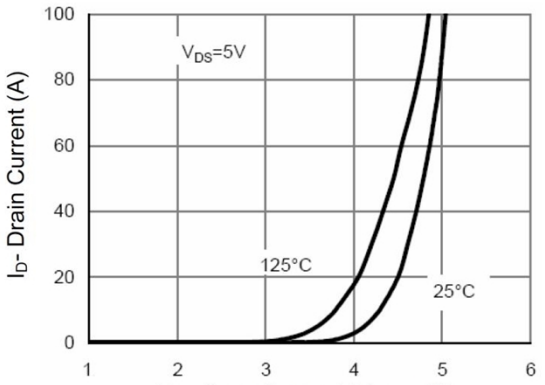
Typical Characteristics



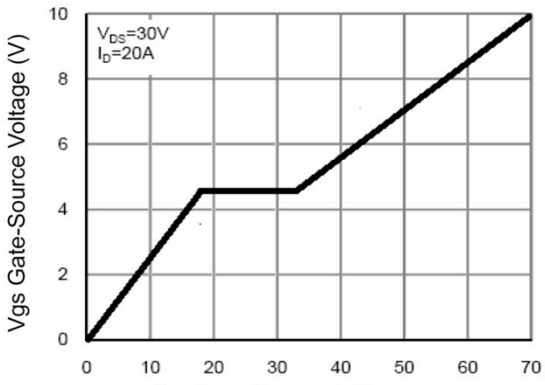
Output Characteristics



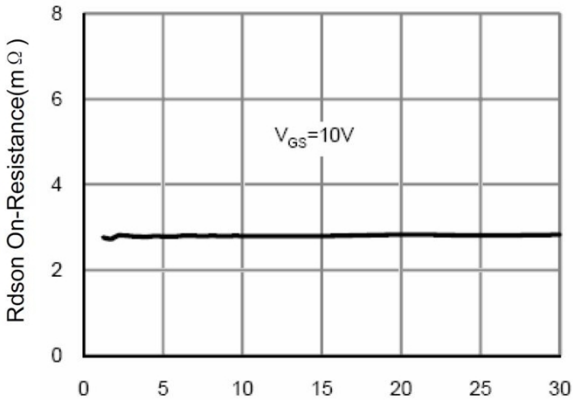
Rdson-Junction Temperature



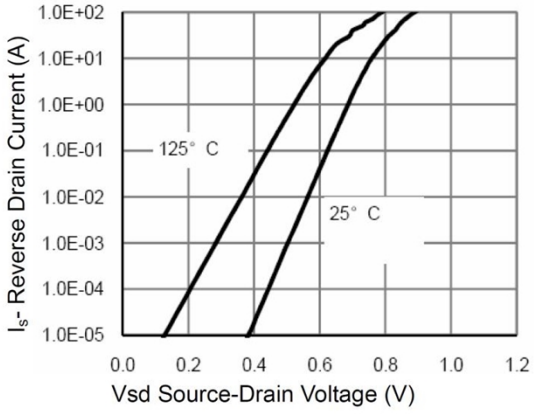
Transfer Characteristics



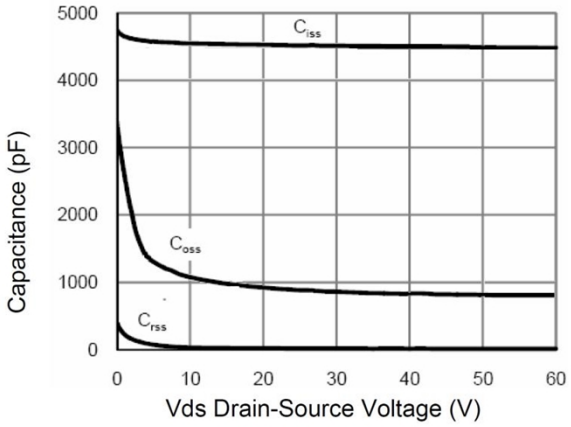
Gate Charge



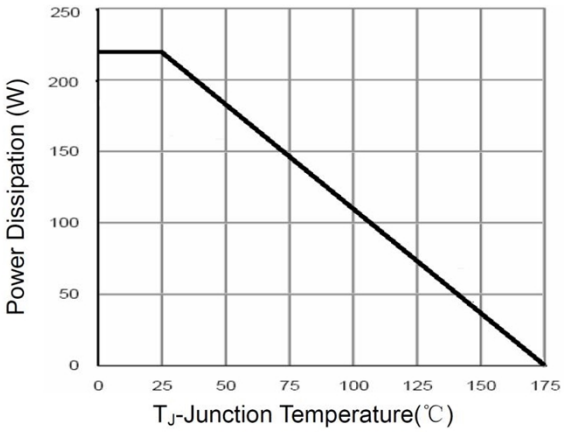
Rdson- Drain Current



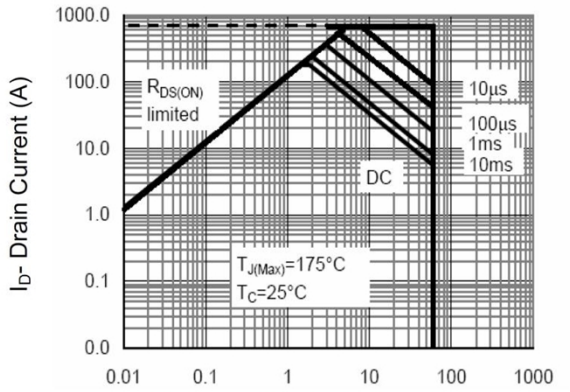
Source- Drain Diode Forward



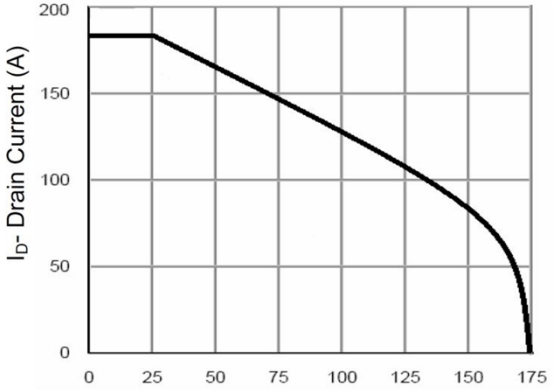
Capacitance vs Vds



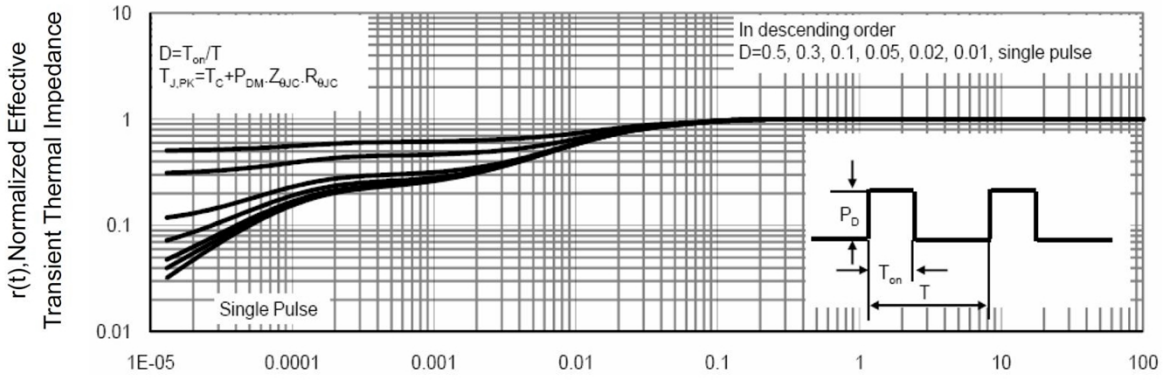
Power De-rating



Safe Operation Area

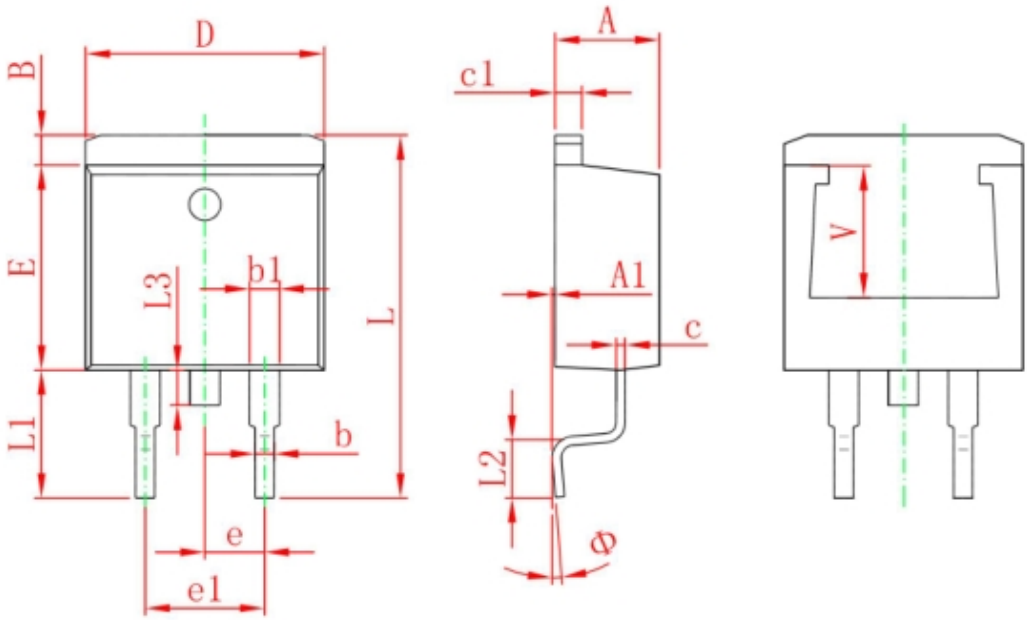


Current De-rating



Normalized Maximum Transient Thermal Impedance

TO-263 Package Information



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
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	