

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-60V	13mΩ@-10V	-82A
	16mΩ@-4.5V	

### Feature

- High density cell design for low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

### Application

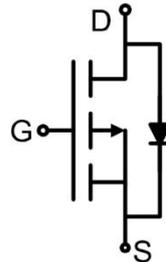
- Load switch

### Package

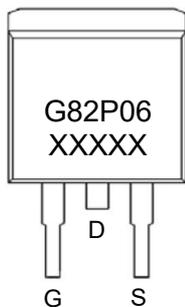


TO-263AB

### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>C</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	-82	A
Continuous Drain Current (T <sub>C</sub> =100°C)	I <sub>D</sub> (100°C)	-58	A
Pulsed Drain Current	I <sub>DM</sub>	-328	A
Power Dissipation	P <sub>D</sub>	150	W
Thermal Resistance from Junction to Case	R <sub>θJC</sub>	1.0	°C/W
Single pulse avalanche energy <sup>4)</sup>	E <sub>AS</sub>	722	mJ
Junction Temperature	T <sub>J</sub>	175	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +175	°C

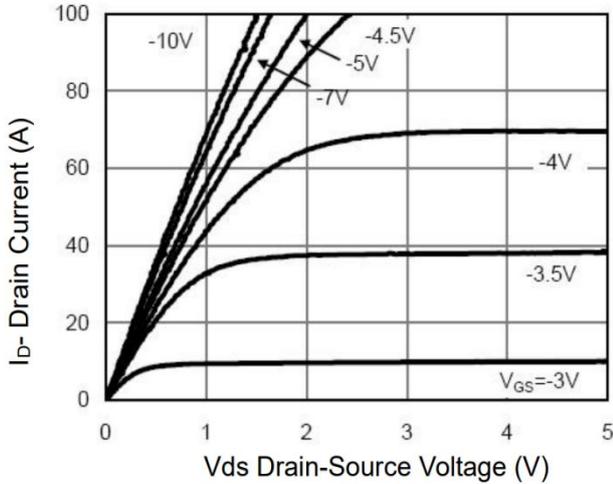
### Electrical characteristics (T<sub>C</sub>=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-60			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -60V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage <sup>2)</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.2	-1.8	-2.4	V
Drain-source on-resistance <sup>2)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A		11	13	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -20A		13	16	
<b>Dynamic characteristics<sup>3)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V, f = 1MHz		5604		pF
Output Capacitance	C <sub>oss</sub>			356		
Reverse Transfer Capacitance	C <sub>rss</sub>			265		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A		62.1		nC
Gate-Source Charge	Q <sub>gs</sub>			9.3		
Gate-Drain Charge	Q <sub>gd</sub>			16.8		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -30V, V <sub>GS</sub> = -10V R <sub>L</sub> = 1.5Ω, R <sub>G</sub> = 3Ω		18		nS
Turn-on rise time	t <sub>r</sub>			20		
Turn-off delay time	t <sub>d(off)</sub>			55		
Turn-off fall time	t <sub>f</sub>			35		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current <sup>1)</sup>	I <sub>S</sub>				-82	A
Diode Forward voltage <sup>2)</sup>	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -20A			-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> = -20A		49		nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/μs <sup>2)</sup>		71		nC

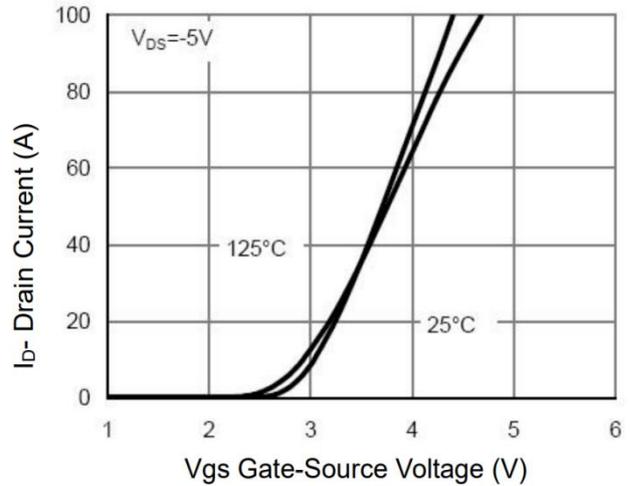
Notes:

- 1) The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 175°C may be used if the PCB allows it.
- 2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production.
- 4) EAS condition: T<sub>J</sub> = 25°C, V<sub>DS</sub> = -30V, V<sub>G</sub> = -10V, L = 0.5mH, R<sub>G</sub> = 25Ω.

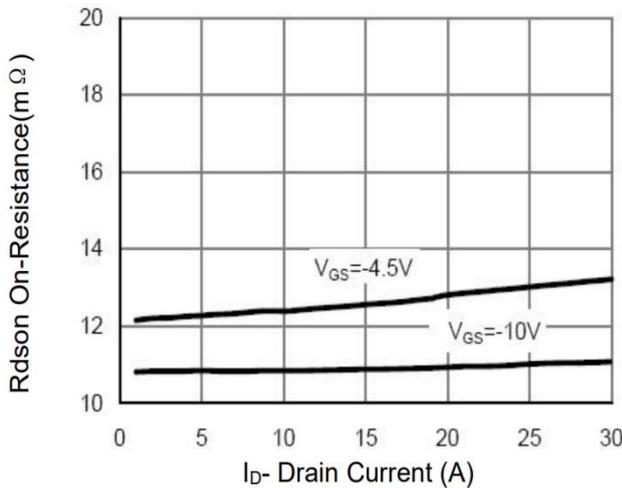
## Typical Characteristics



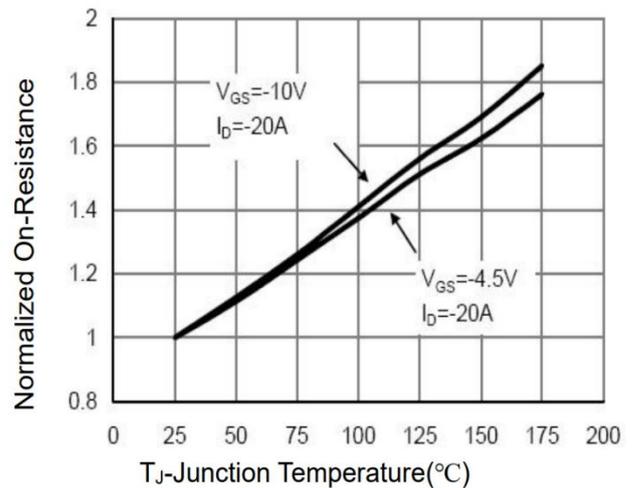
**Figure 1 Output Characteristics**



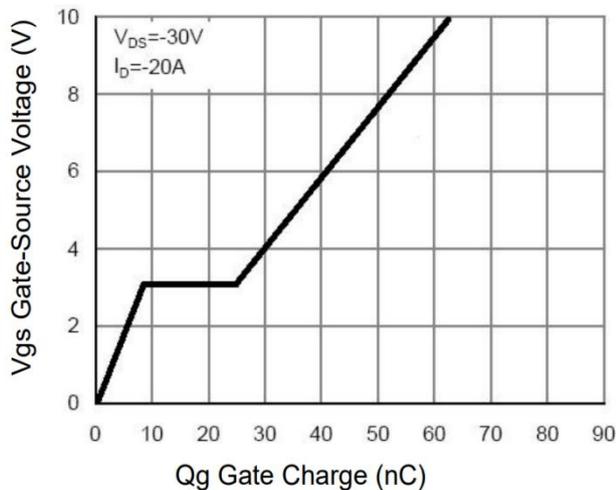
**Figure 2 Transfer Characteristics**



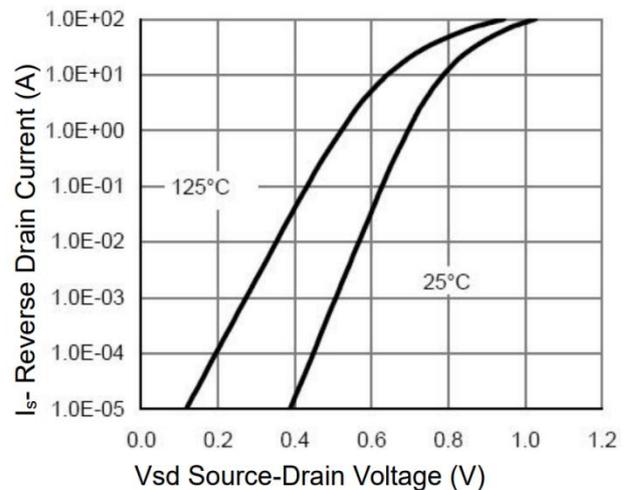
**Figure 3 Rdson- Drain Current**



**Figure 4 Rdson-Junction Temperature**

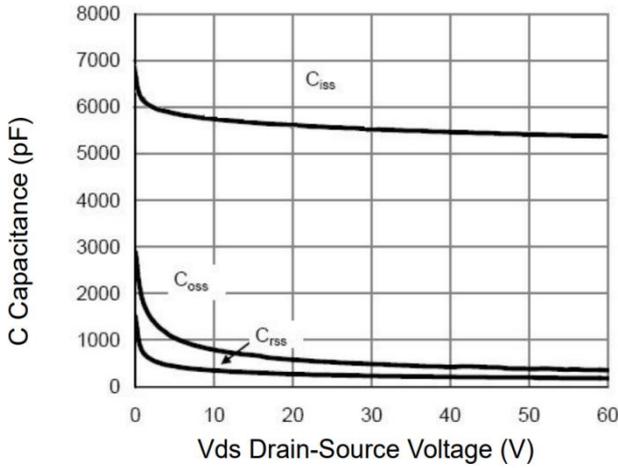


**Figure 5 Gate Charge**

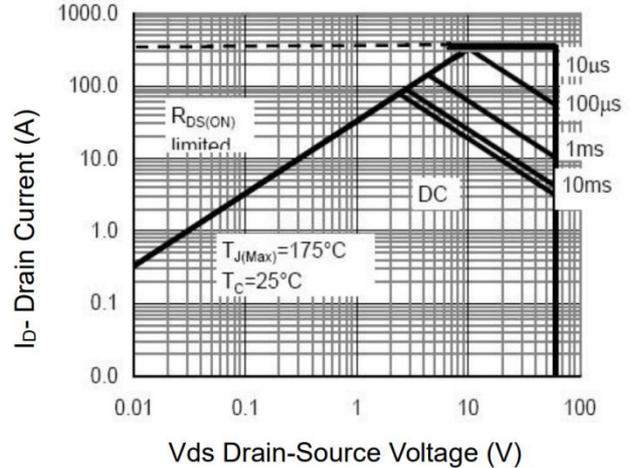


**Figure 6 Source- Drain Diode Forward**

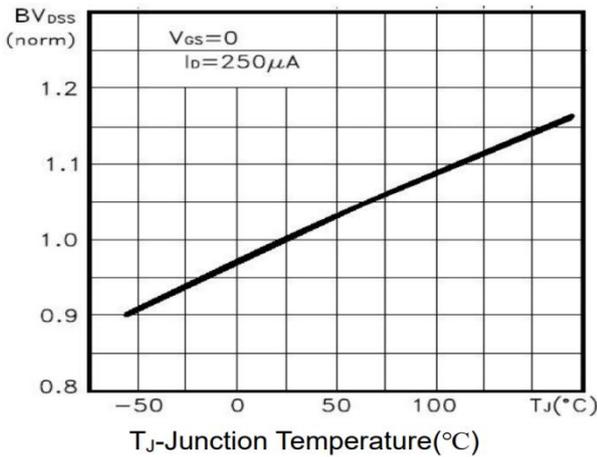
## Typical Characteristics



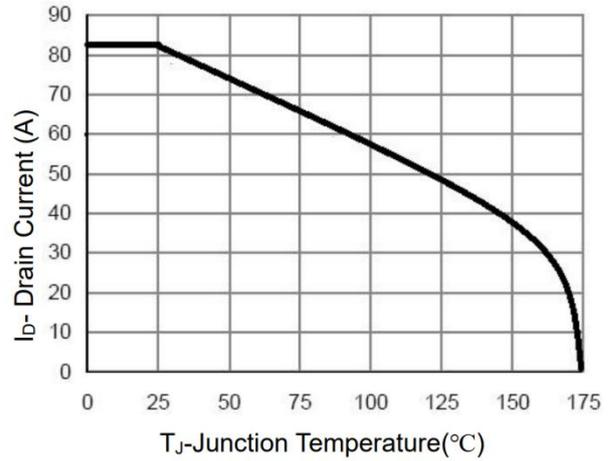
**Figure 7 Capacitance vs Vds**



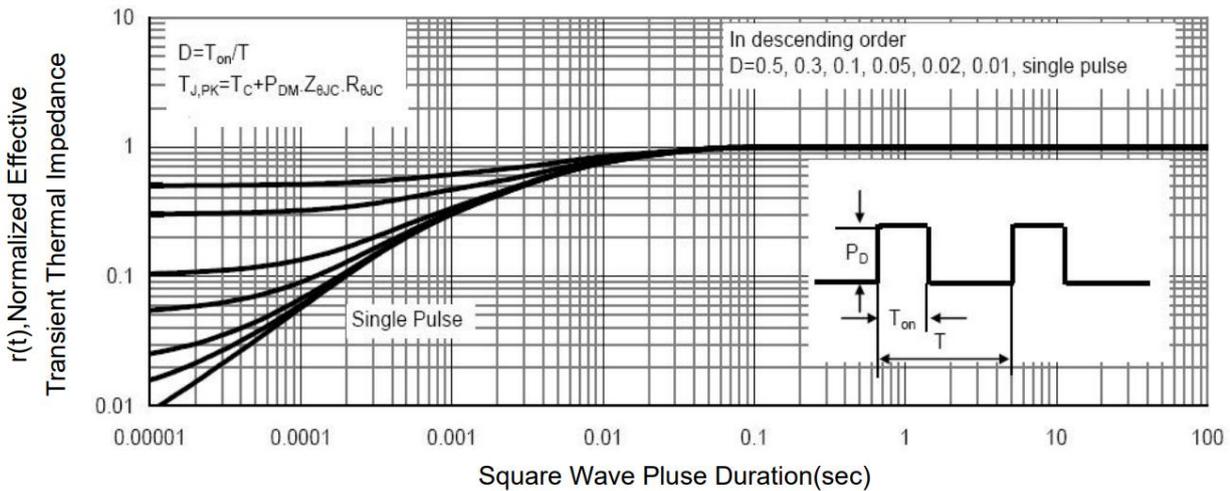
**Figure 8 Safe Operation Area**



**Figure 9 BV<sub>DSS</sub> vs Junction Temperature**

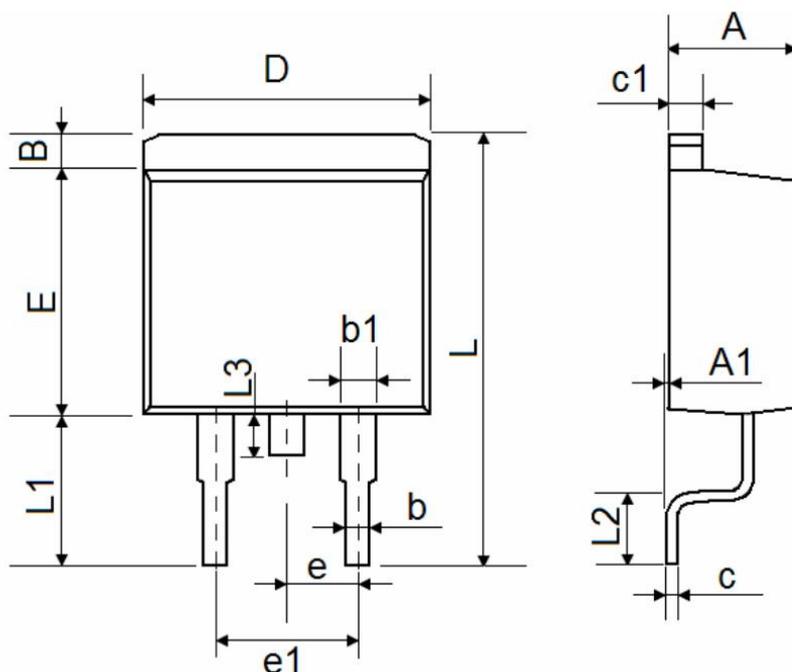


**Figure 10 ID Current Derating vs Junction Temperature**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

### TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.200	4.670	0.165	0.184
A1	0.000	0.250	0.000	0.010
B	1.360 REF.		0.054 REF.	
b	0.700	0.910	0.028	0.036
b1	1.170	1.750	0.046	0.069
c	0.310	0.600	0.012	0.024
c1	1.150	1.400	0.045	0.055
D	9.780	10.360	0.385	0.408
E	8.500	9.300	0.335	0.366
e	2.540 BSC.		0.100 BSC.	
e1	5.080 BSC.		0.200 BSC.	
L	14.610	15.880	0.575	0.625
L1	4.400	6.000	0.173	0.236
L2	1.780	2.790	0.070	0.110
L3	1.500 REF.		0.059 REF.	