

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
250V	18.5mΩ@10V	80A

Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$
- Suffix "-Q1" for AEC-Q101

Application

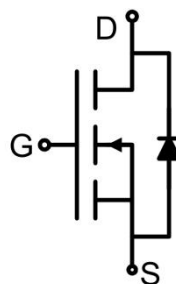
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

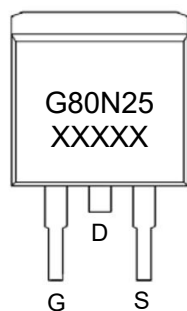


TO-263AB

Circuit diagram



Marking



Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	250	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	80	A
Continuous Drain Current(T _c =100°C)	I _D (100°C)	56.6	A
Pulsed Drain Current	I _{DM}	320	A
Power Dissipation	P _D	300	W
Thermal Resistance,Junction-to-Case ¹⁾	R _{θJC}	0.5	°C/W
Single pulse avalanche energy ⁴⁾	E _{AS}	1200	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=25 °C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	250			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =250V,V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage ²⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.5	3.5	4.4	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =40A		16	18.5	mΩ
Forward transconductance ²⁾	g _{FS}	V _{DS} =10V, I _D =40A	70			S
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =125V,V _{GS} =0V,f =1MHz		5400		pF
Output Capacitance	C _{oss}			329		
Reverse Transfer Capacitance	C _{rss}			12		
Total Gate Charge	Q _g	V _{DS} =125V,V _{GS} =10V,I _D =40A		76.7		nC
Gate-Source Charge	Q _{gs}			22.7		
Gate-Drain Charge	Q _{gd}			20		
Turn-on delay time	t _{d(on)}	V _{DD} =125V,V _{GS} =10V, I _D =40A,R _G =4.7Ω		18		nS
Turn-on rise time	t _r			26		
Turn-off delay time	t _{d(off)}			41		
Turn-off fall time	t _f			11		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				80	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =80A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =40A		140		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ²⁾		600		nC

Notes:

- 1) Surface Mounted on FR4 Board, t ≤ 10 sec.
- 2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production.
- 4) EAS condition : T_J=25 °C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω.

Typical Characteristics

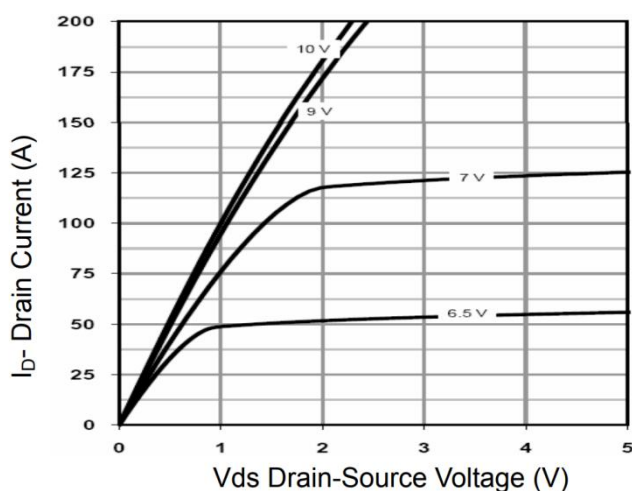


Figure 1 Output Characteristics

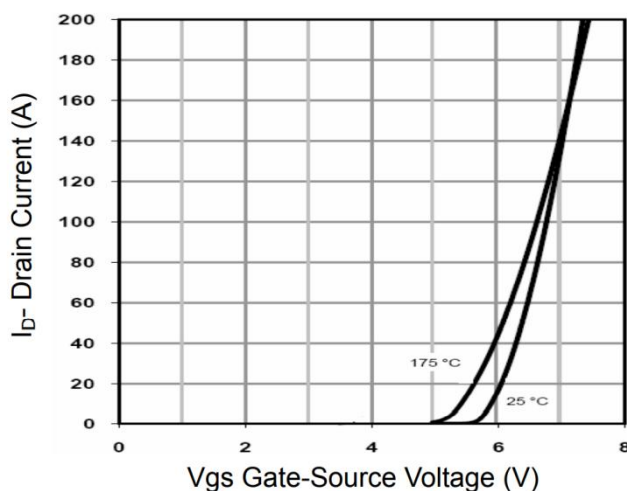


Figure 2 Transfer Characteristics

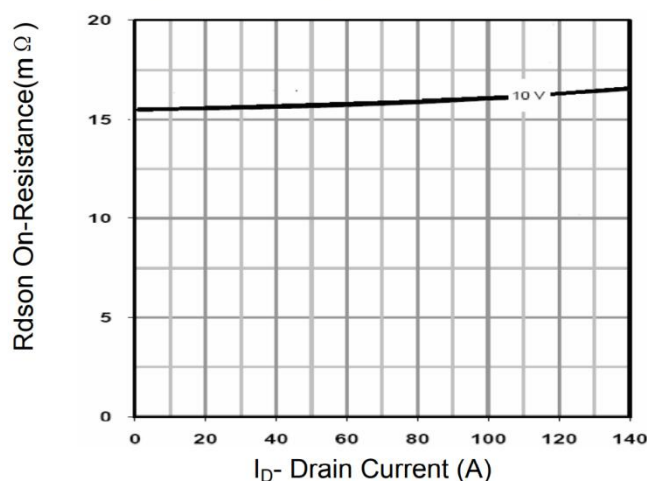


Figure 3 $R_{DS(on)}$ - Drain Current

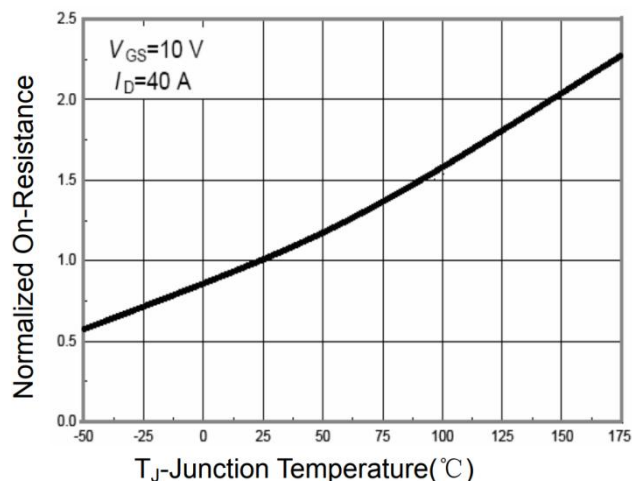


Figure 4 $R_{DS(on)}$ -Junction Temperature

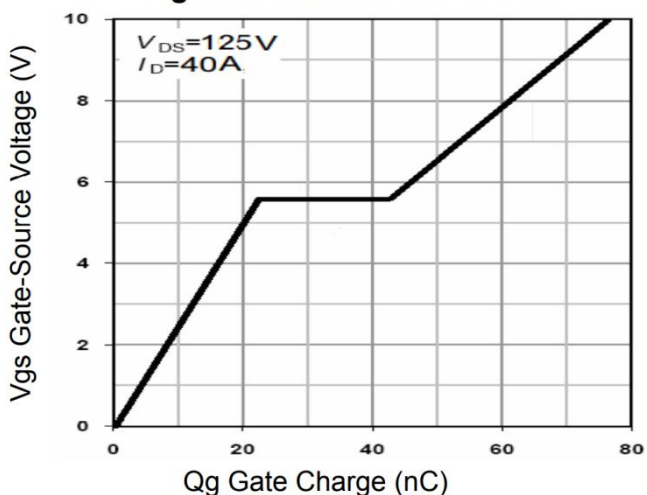


Figure 5 Gate Charge

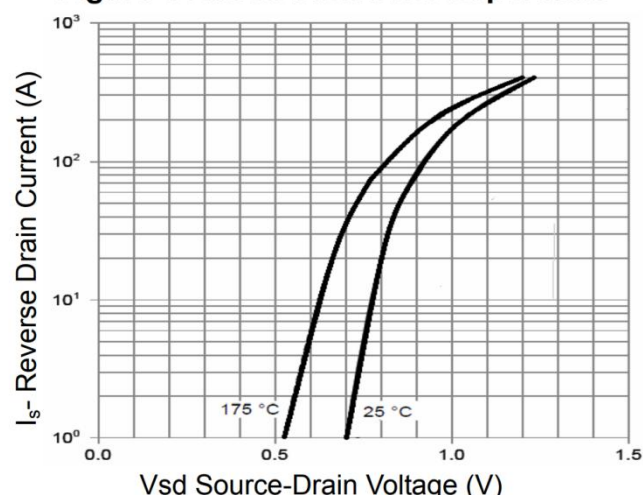


Figure 6 Source- Drain Diode Forward

Typical Characteristics

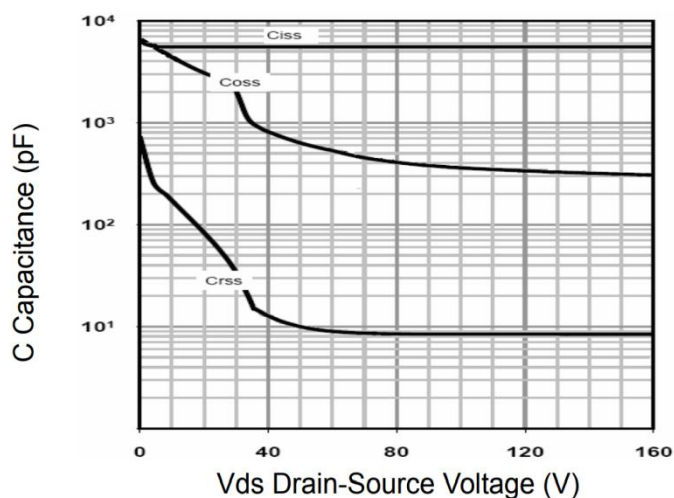


Figure 7 Capacitance vs Vds

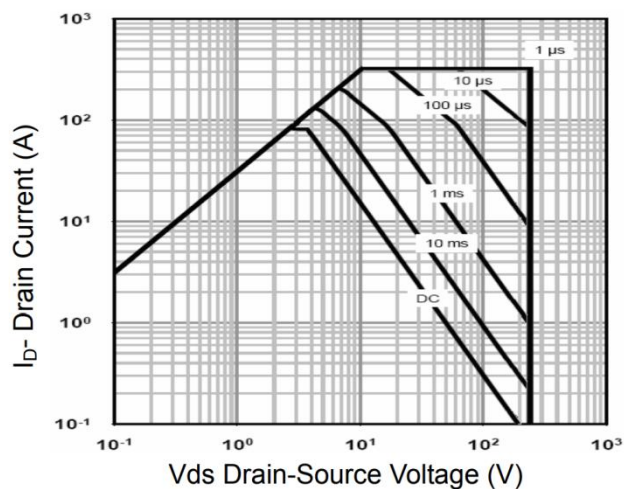


Figure 8 Safe Operation Area

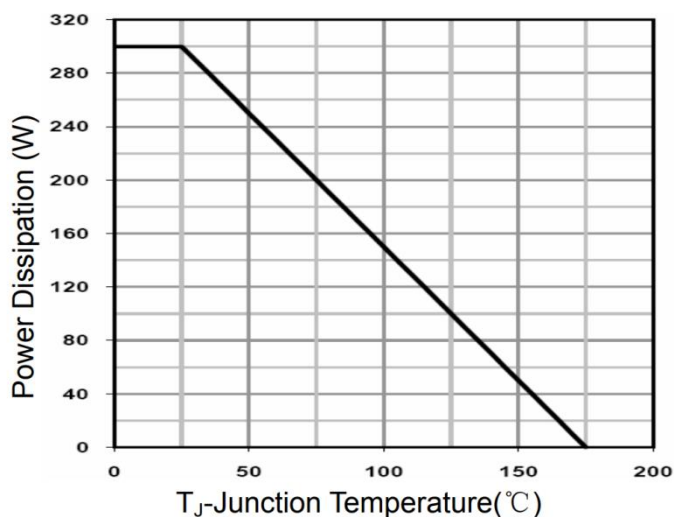


Figure 9 Power De-rating

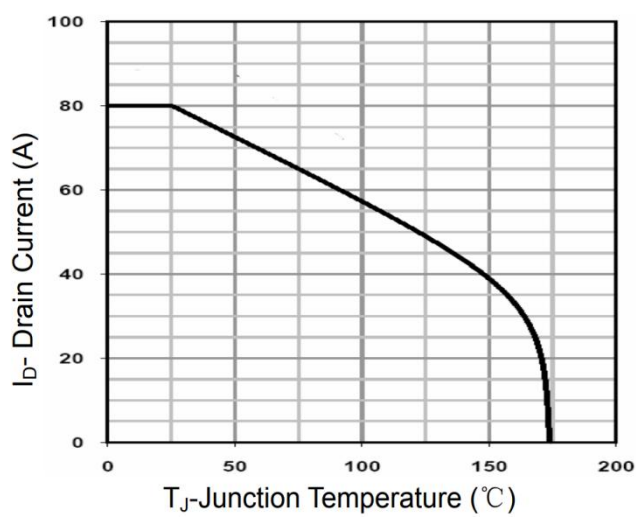


Figure 10 Current De-rating

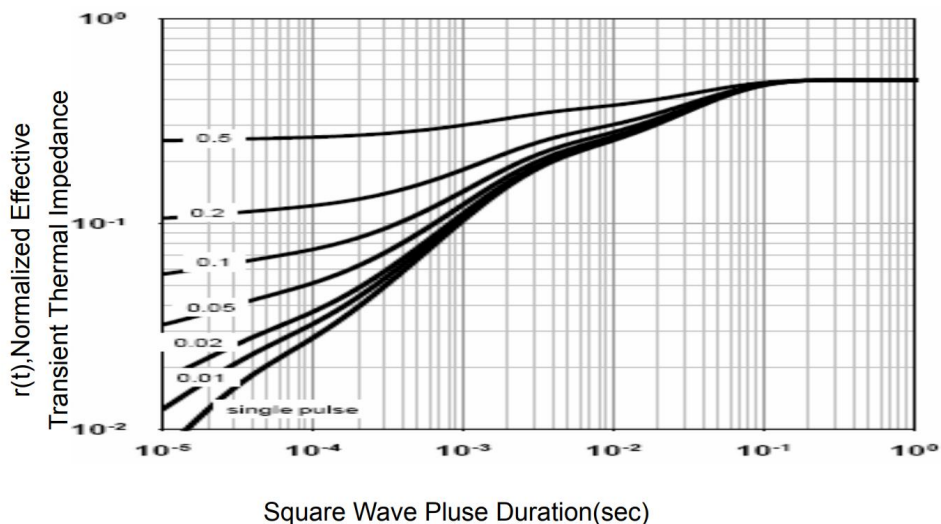
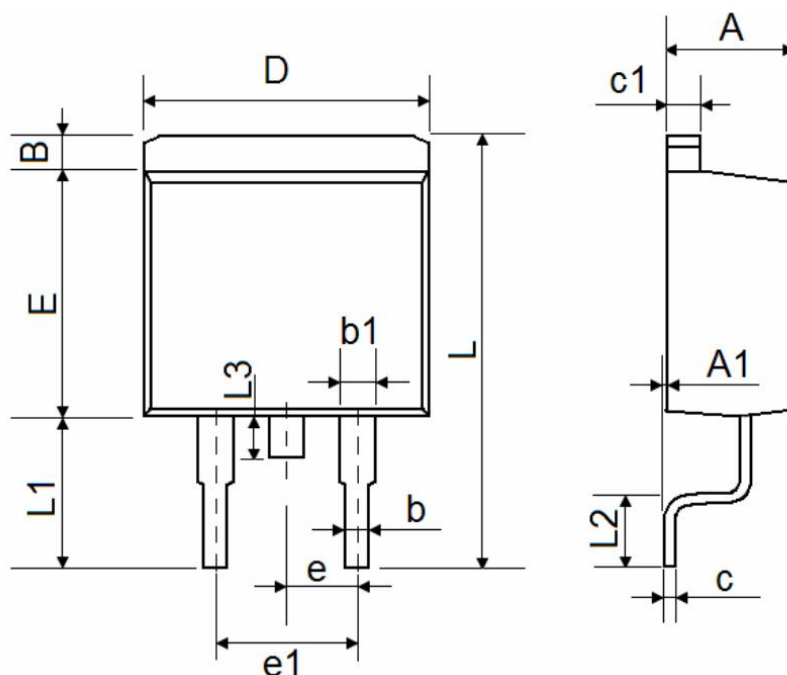


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263AB 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	1.170	1.370	0.046	0.054
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	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067