

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	2.5mΩ@10V	250A

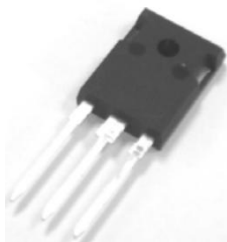
Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$

Application

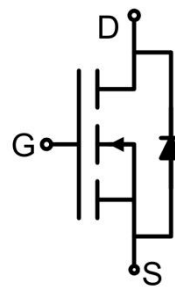
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package



TO-247AB

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	250	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	175	A
Pulsed Drain Current	I _{DM}	1000	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	2000	mJ
Power Dissipation	P _D	400	W
Thermal Resistance Junction to Case ¹⁾	R _{θJC}	0.38	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage ³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3		5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =125A		2.2	2.5	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		15700		pF
Output Capacitance	C _{oss}			1600		
Reverse Transfer Capacitance	C _{rss}			101		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =125A		208		nC
Gate-Source Charge	Q _{gs}			86		
Gate-Drain Charge	Q _{gd}			38.4		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, I _D =125A R _G =1.8Ω		30		nS
Turn-on rise time	t _r			85		
Turn-off delay time	t _{d(off)}			95		
Turn-off fall time	t _f			38		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				250	A
Diode Forward voltage ³⁾	V _{SD}	V _{GS} =0V, I _F =125A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =I _S , di/dt =100A/μs ³⁾		115		nS
Reverse Recovery Charge	Q _{rr}	T _J =25℃		320		nC

Notes:

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

Typical Characteristics

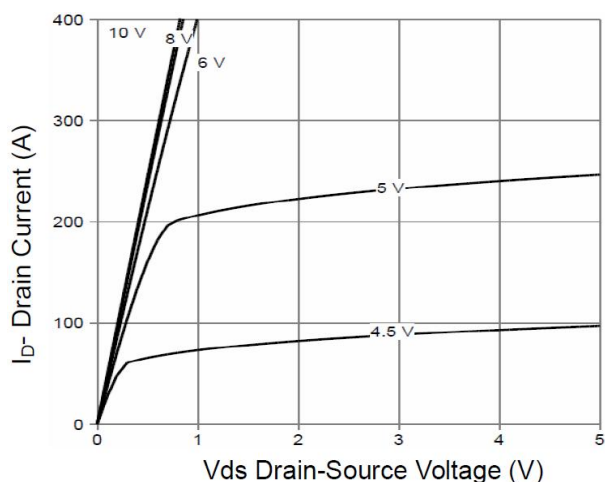


Figure 1 Output Characteristics

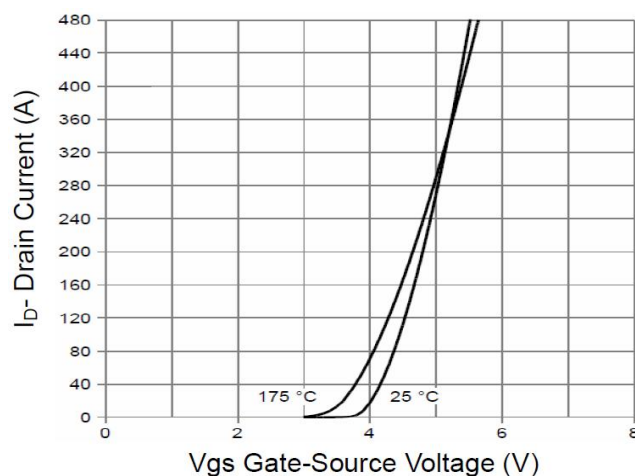


Figure 2 Transfer Characteristics

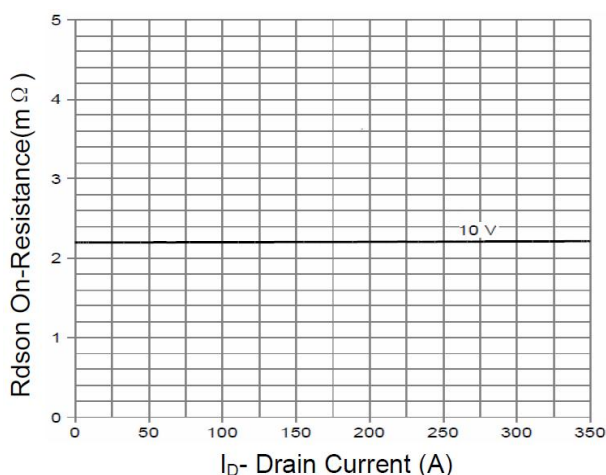


Figure 3 $R_{DS(on)}$ - Drain Current

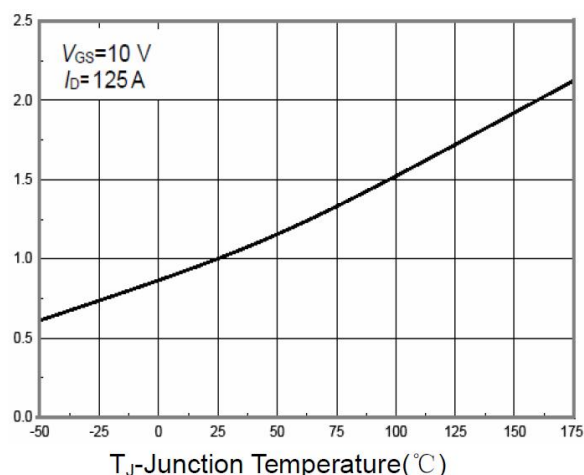


Figure 4 $R_{DS(on)}$ -Junction Temperature

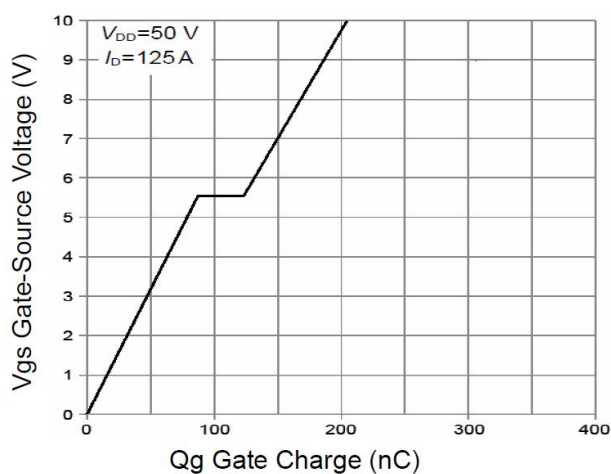


Figure 5 Gate Charge

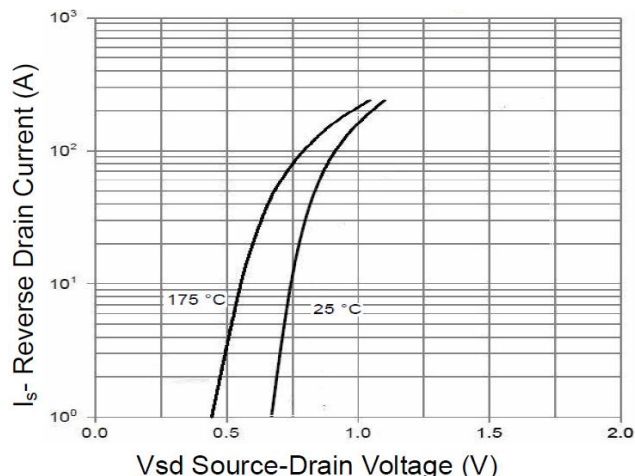


Figure 6 Source- Drain Diode Forward

Typical Characteristics

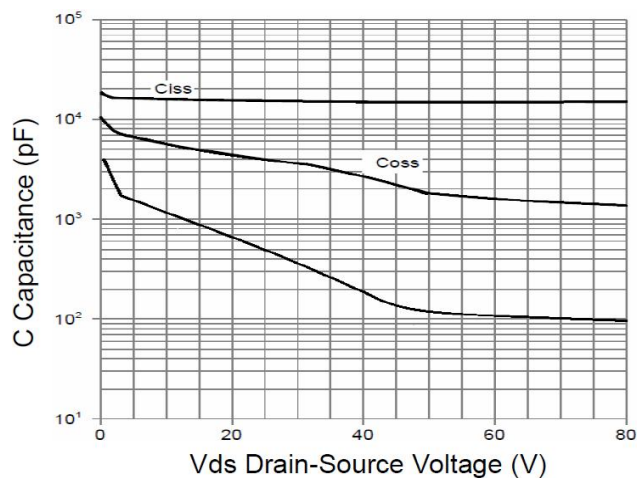


Figure 7 Capacitance vs V_{ds}

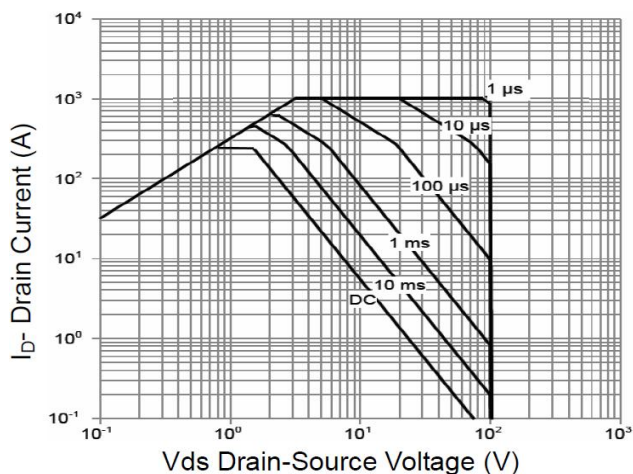


Figure 8 Safe Operation Area

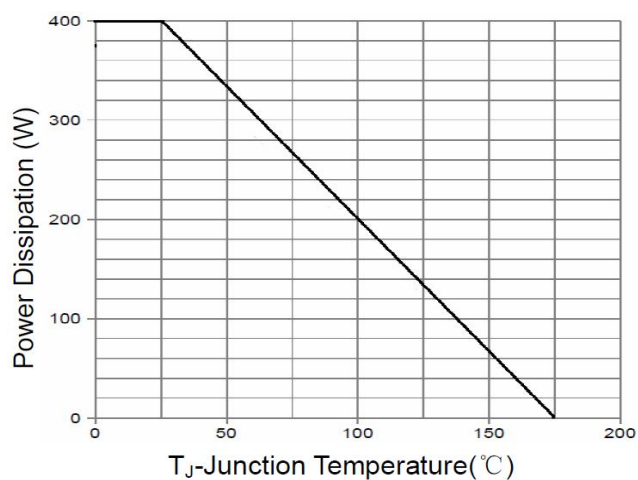


Figure 9 Power De-rating

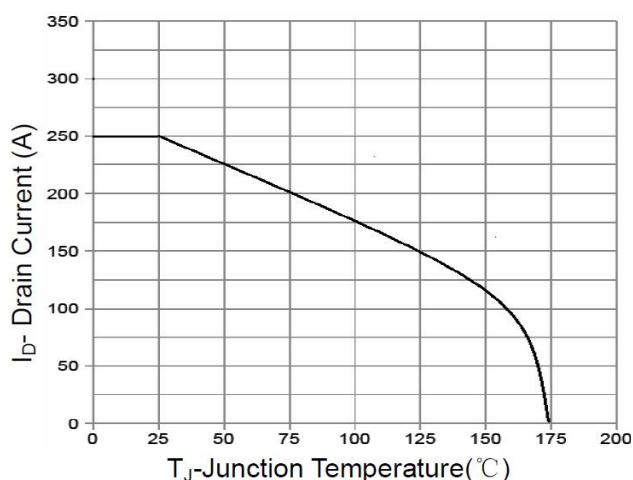


Figure 10 Current De-rating

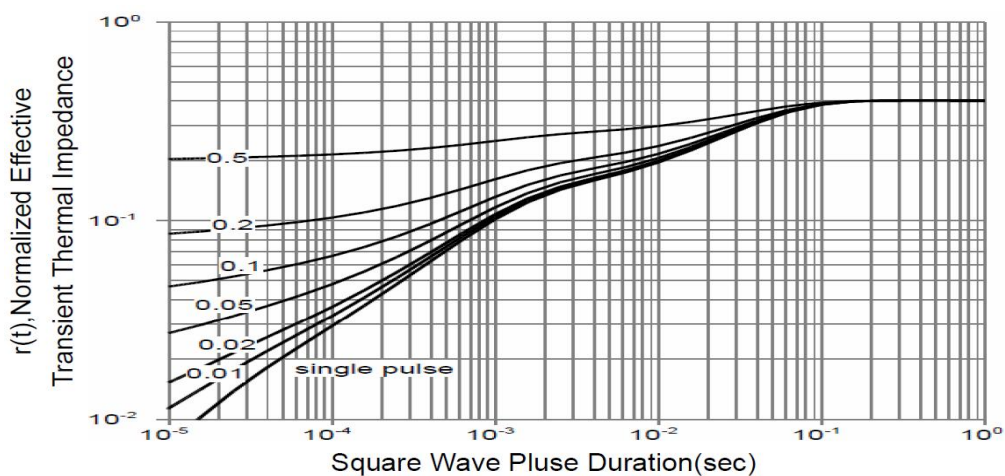
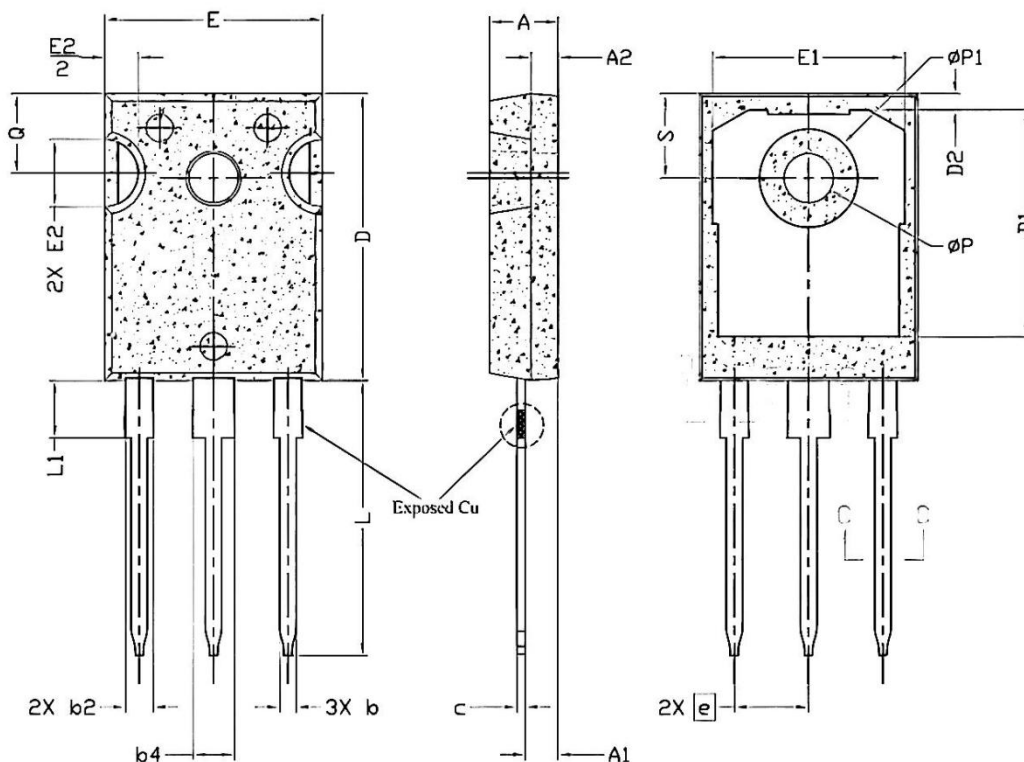


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.830	5.210	0.190	0.205
A1	2.290	2.550	0.090	0.100
A2	1.500	2.490	0.059	0.098
b	1.120	1.330	0.044	0.052
b2	1.910	2.390	0.075	0.094
b4	2.870	3.220	0.113	0.127
c	0.550	0.690	0.022	0.027
D	20.800	21.100	0.819	0.831
D1	16.250	17.650	0.640	0.695
D2	0.510	1.350	0.020	0.053
E	15.750	16.130	0.620	0.635
E1	13.460	14.160	0.530	0.557
E2	4.320	5.490	0.170	0.216
L	19.810	20.320	0.780	0.800
L1	4.100	4.400	0.161	0.173
Q	5.390	6.200	0.212	0.244
φ P	3.560	3.650	0.140	0.144
S	6.040	6.300	0.238	0.248