

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	2.4mΩ@10V	280A

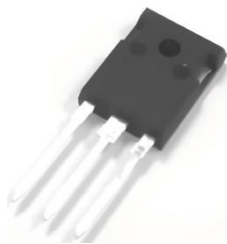
Feature

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

Application

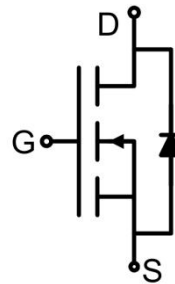
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package



TO-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	280	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	200	A
Pulsed Drain Current	I _{DM}	980	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	2784	mJ
Power Dissipation	P _D	365	W
Thermal Resistance Junction to Case	R _{θJC}	0.41	°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	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =140A		1.85	2.4	mΩ
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		17000		pF
Output Capacitance	C _{oss}			1500		
Reverse Transfer Capacitance	C _{rss}			77		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =140A		252		nC
Gate-Source Charge	Q _{gs}			72		
Gate-Drain Charge	Q _{gd}			63		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, I _D =140A R _G =1.6Ω		37		nS
Turn-on rise time	t _r			29		
Turn-off delay time	t _{d(off)}			82		
Turn-off fall time	t _f			34		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				280	A
Diode Forward voltage ³⁾	V _{SD}	V _{GS} =0V, I _S =140A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =140A, di/dt =100A/μs		105		nS
Reverse Recovery Charge	Q _{rr}	T _J =25℃		290		nC

Notes:

1) EAS condition : T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

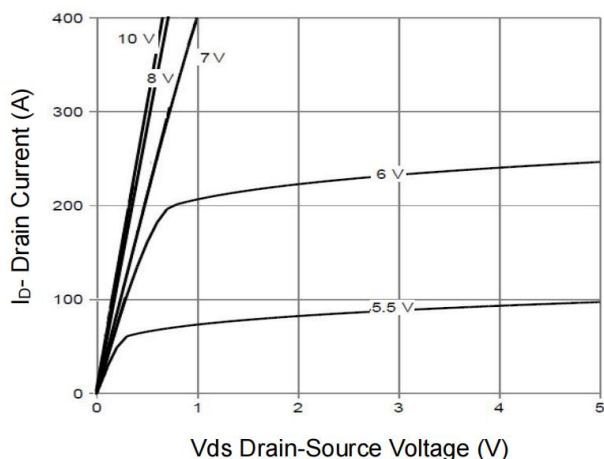


Figure 1 Output Characteristics

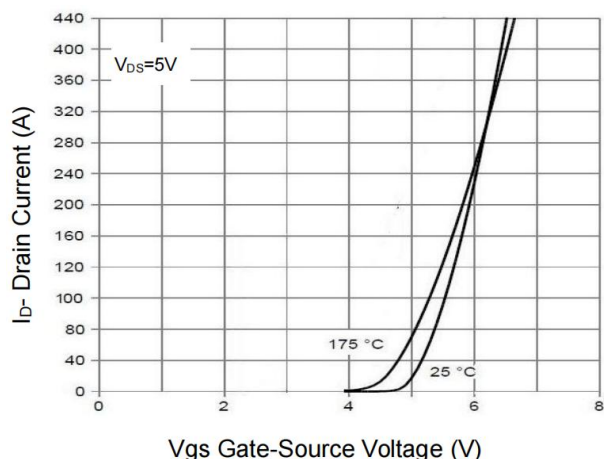


Figure 2 Transfer Characteristics

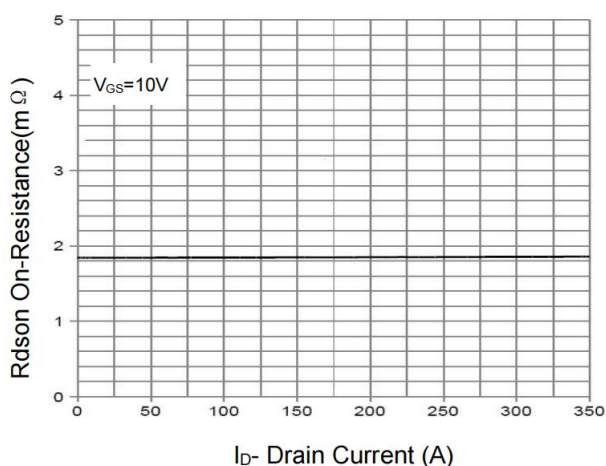


Figure 3 Rdson- Drain Current

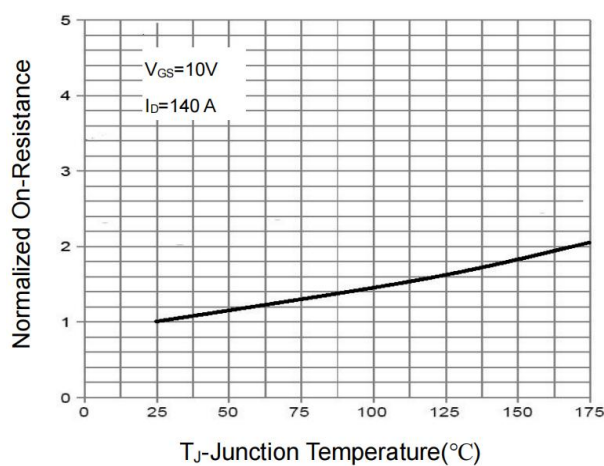


Figure 4 Rdson-Junction Temperature

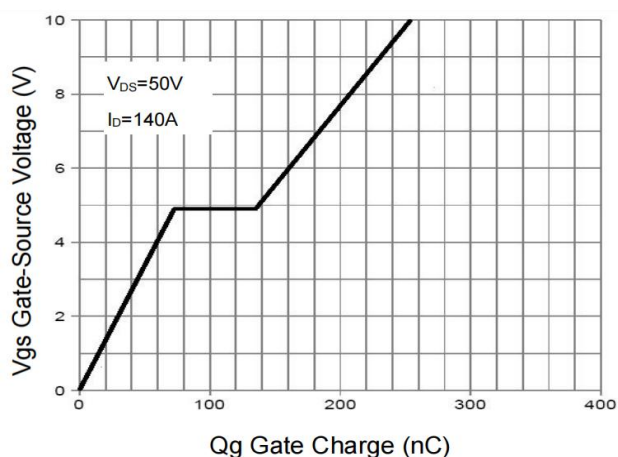


Figure 5 Gate Charge

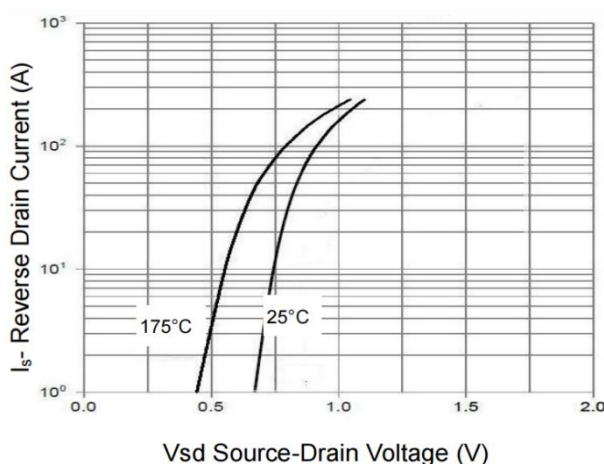
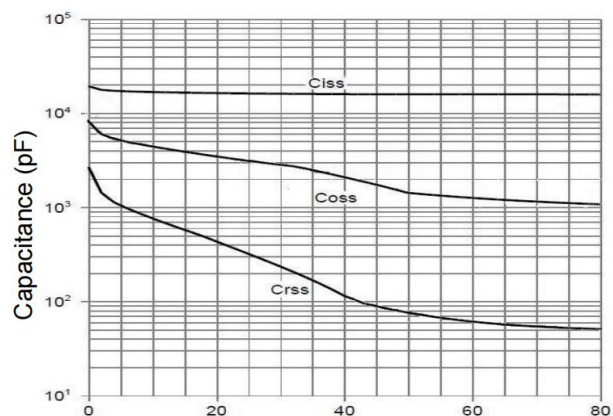
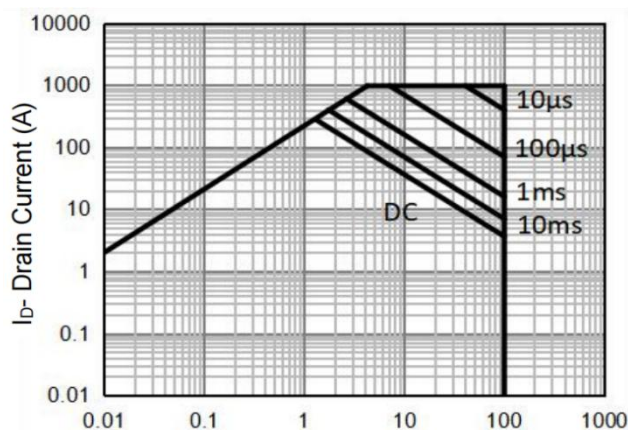


Figure 6 Source- Drain Diode Forward

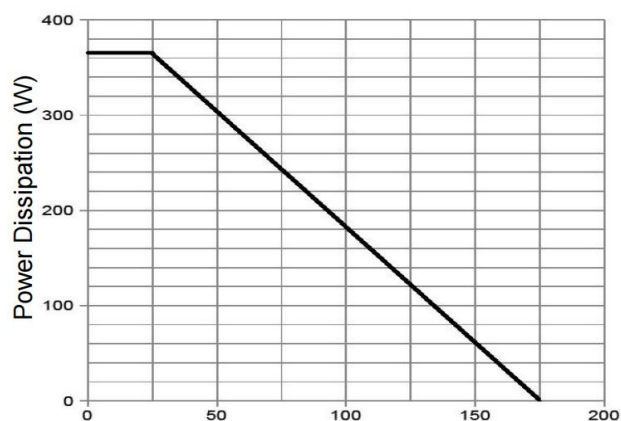
Typical Characteristics



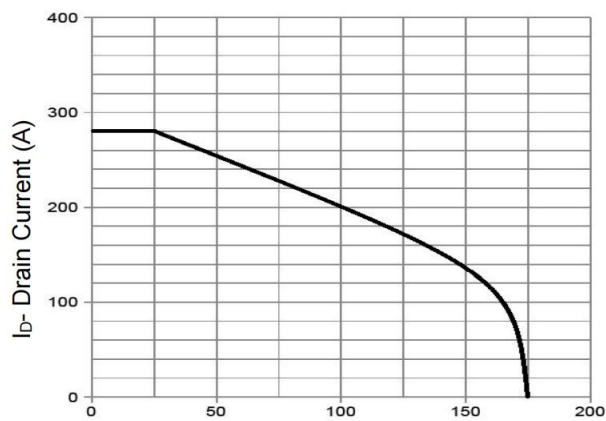
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area



TA-Junction Temperature(°C)
Figure 9 Power De-rating



TA-Junction Temperature (°C)
Figure 10 Current De-rating

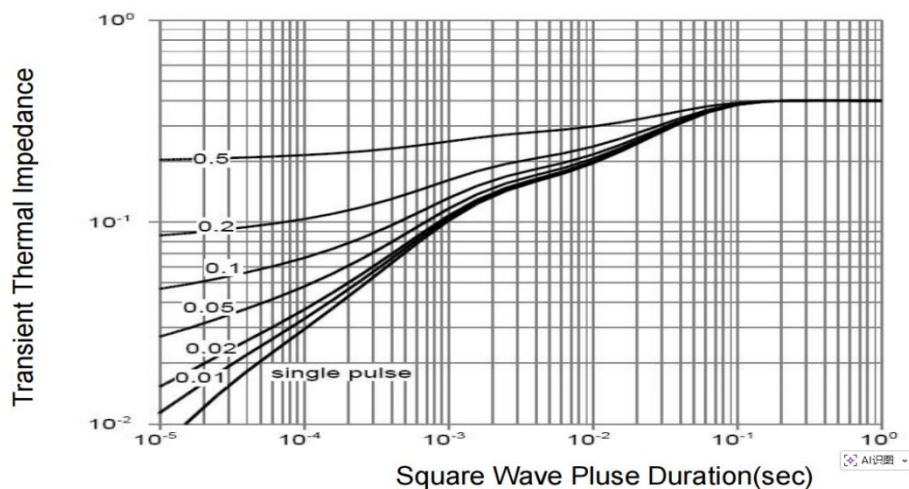
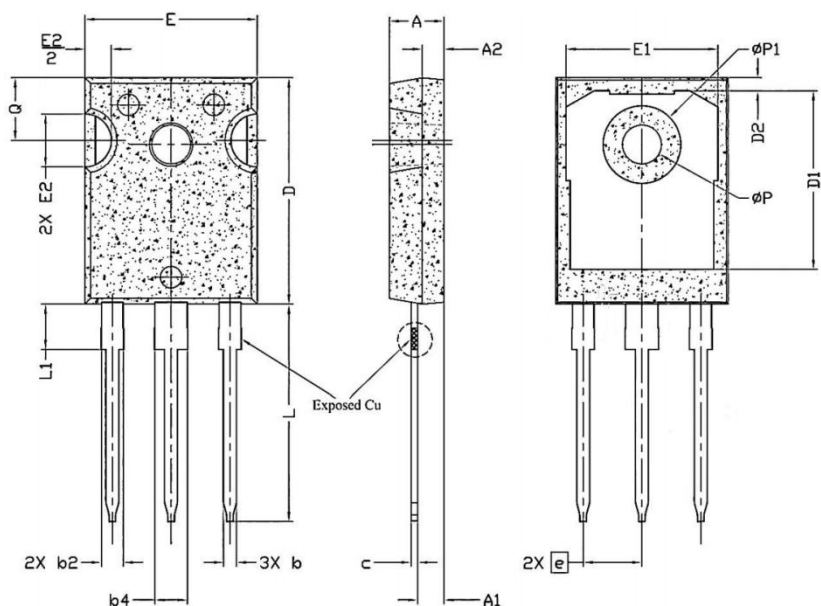


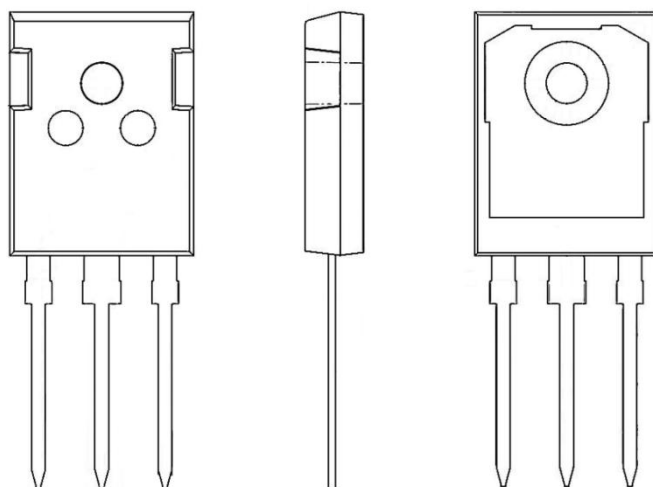
Figure 11 Normalized Maximum Transient Thermal Impedance

TO-247AB Package Information

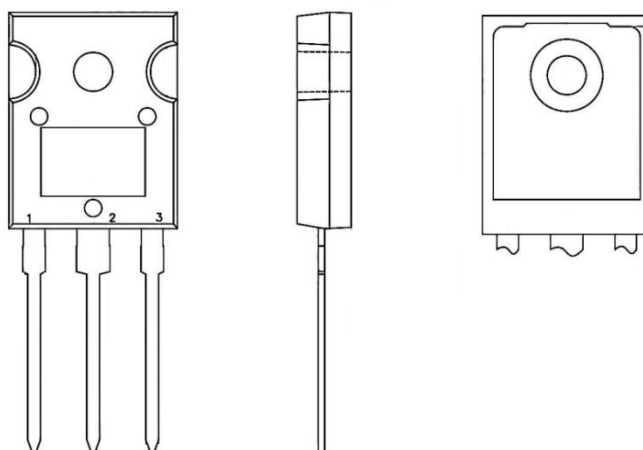
View 1



View 2



View 3



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	2.210	2.590	0.087	0.102
A2	1.500	2.490	0.059	0.098
b	0.990	1.400	0.039	0.055
b2	1.650	2.390	0.065	0.094
b4	2.590	3.430	0.102	0.135
c	0.380	0.890	0.015	0.035
D	19.710	21.100	0.776	0.831
D1	13.080	17.650	0.515	0.695
D2	0.510	1.350	0.020	0.053
E	15.290	16.130	0.602	0.635
E1	13.100	14.160	0.516	0.557
E2	4.320	5.490	0.170	0.216
e	5.440 BSC.		0.214 BSC.	
L	19.570	21.000	0.780	0.827
L1	3.710	4.400	0.146	0.173
Q	5.390	6.200	0.212	0.244
φ P	3.400	3.660	0.134	0.144
φ P1	7.190 REF.		0.283 REF.	