

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
200V	27mΩ@10V	90A

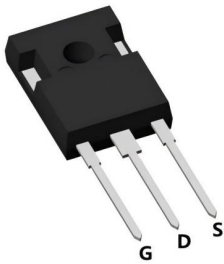
Feature

- Advanced trench technology
- Low gate charge to minimize switching loss
- Fast recovery body diode
- Suffix “-Q1” for AEC-Q101

Application

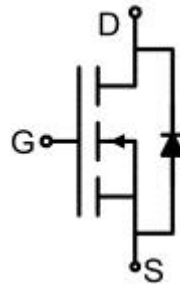
- Motor drivers
- DC-DC convertor

Package

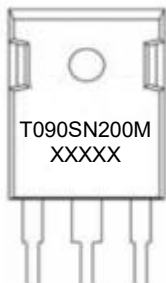


TO-247AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	200	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	90	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	63	A
Pulsed Drain Current (t _p =10μs)	I _{DM}	360	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	750	mJ
Power Dissipation	P _D	500	W
Thermal Resistance Junction to Case	R _{θJC}	0.3	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature Range	T _{STG}	-55 ~ +175	°C

Electrical characteristics (T_A=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	200			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =200V, 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 ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =45A			27	mΩ
Dynamic characteristics³⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		5871		pF
Output Capacitance	C _{oss}			392		
Reverse Transfer Capacitance	C _{rss}			165		
Total Gate Charge	Q _g	V _{DS} =160V, V _{GS} =10V, I _D =45A		130		nC
Gate-Source Charge	Q _{gs}			22		
Gate-Drain Charge	Q _{gd}			38		
Turn-on delay time	t _{d(on)}	V _{DS} =100V, V _{GS} =10V, I _D =45A R _G =4Ω		29		nS
Turn-on rise time	t _r			45		
Turn-off delay time	t _{d(off)}			22		
Turn-off fall time	t _f			41		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				90	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =45A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =40A, di/dt =-100A/μs		80		nS
Reverse Recovery Charge	Q _{rr}			160		nC

Notes:

- 1) The EAS data shows Max. rating. The test condition is V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH.
- 2) The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

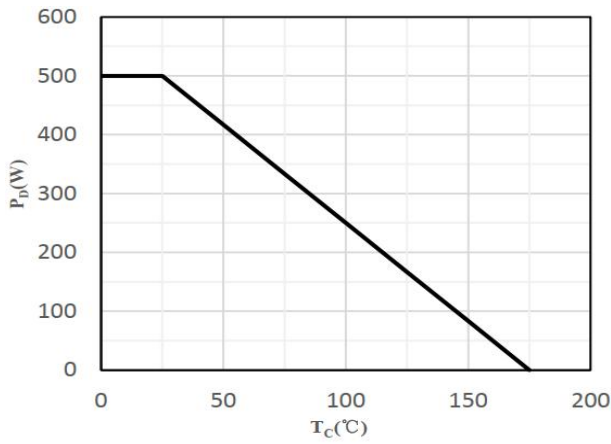


Fig 1 Power Dissipation

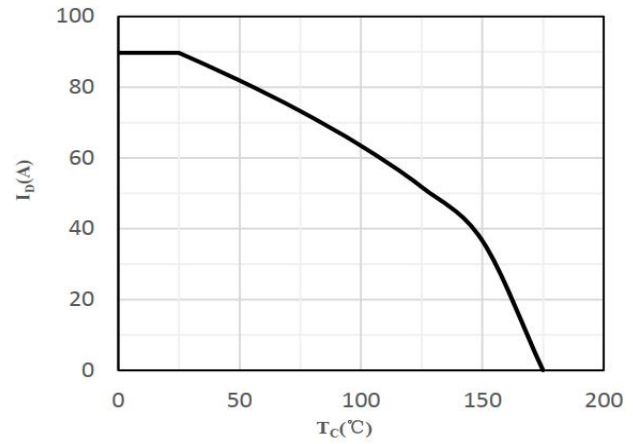


Fig 2 Drain Current

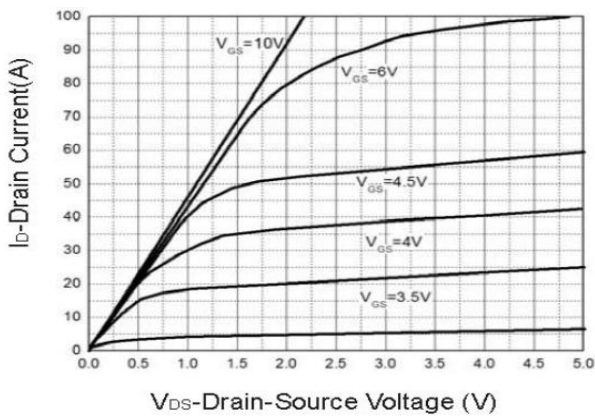


Fig 3 Typical Output Characteristics

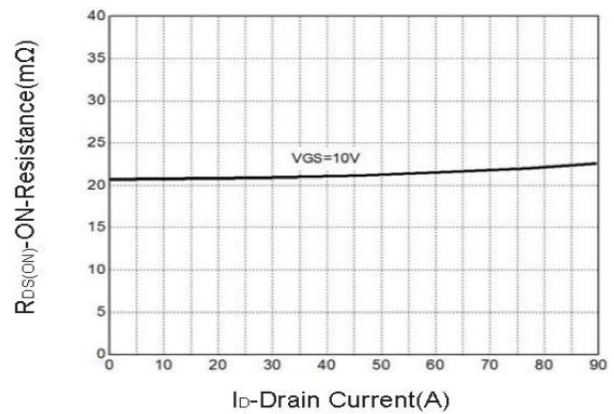


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

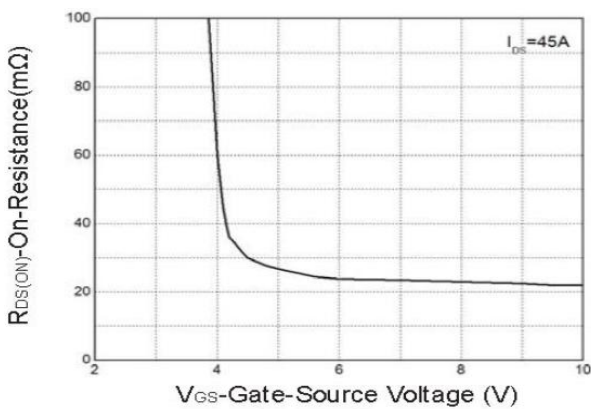


Fig 5 On-Resistance vs. Gate-Source Voltage

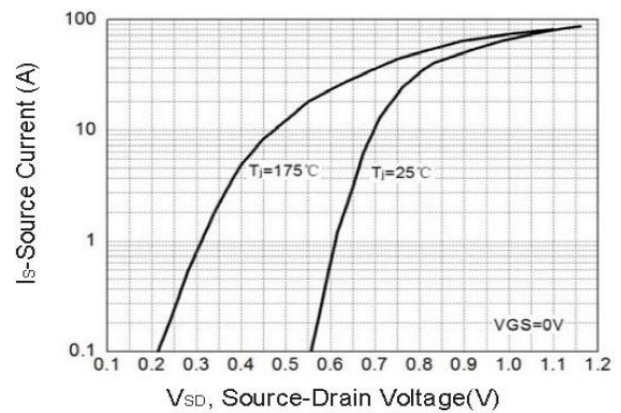


Fig 6 Body-Diode Characteristics

Typical Characteristics

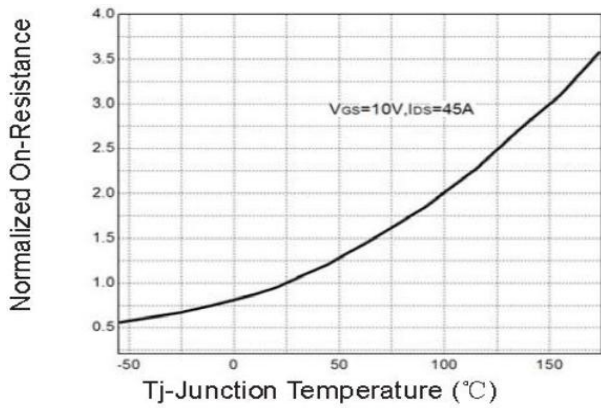


Fig 7 Normalized On-Resistance vs. Junction Temperature

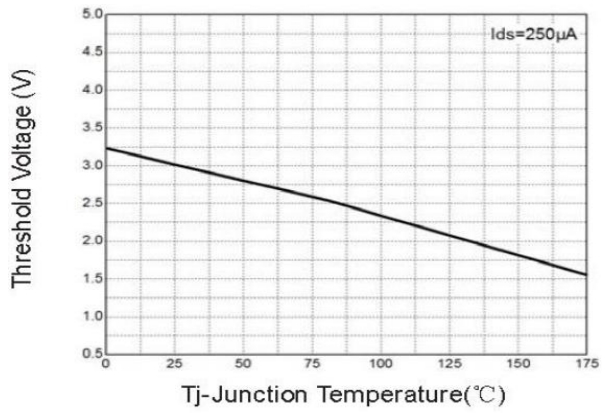


Fig 8 $V_{GS(th)}$ vs. Junction Temperature

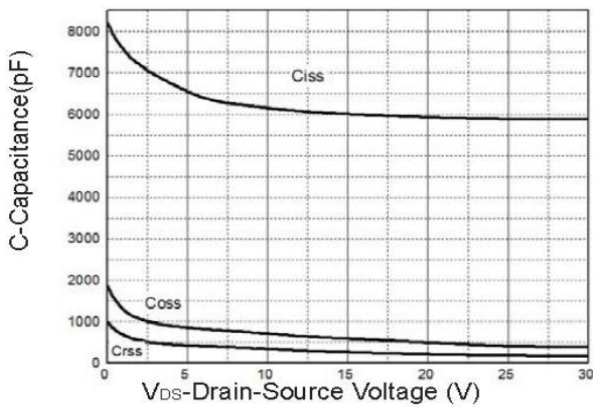


Fig 9 Capacitance Characteristics

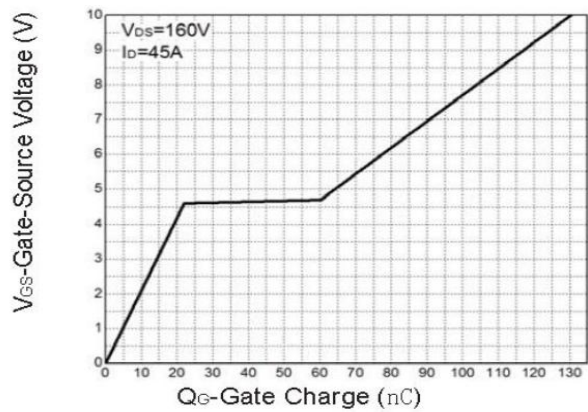
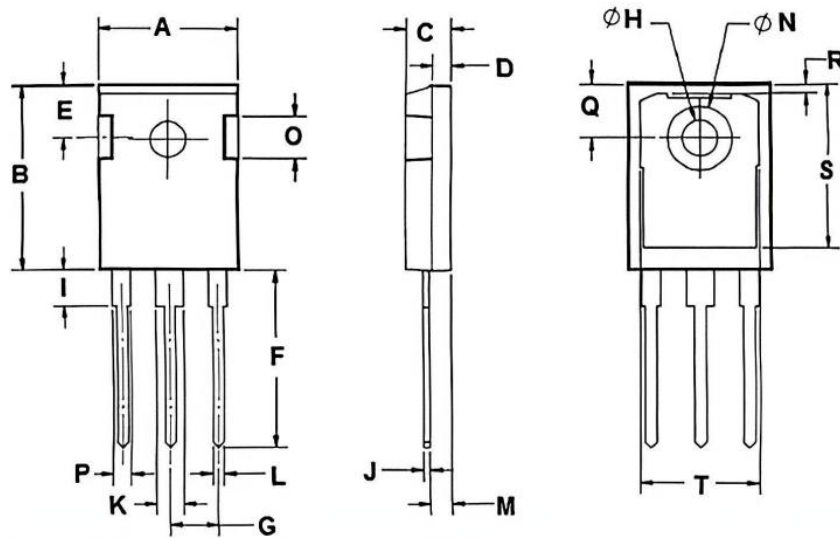


Fig 10 Gate-Charge Characteristics

TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	15.500	16.100	0.610	0.634
B	20.700	21.300	0.815	0.839
C	4.700	5.300	0.185	0.209
D	1.800	2.200	0.071	0.087
E	5.200	5.800	0.205	0.228
F	19.700	20.300	0.776	0.799
G	5.200	5.600	0.205	0.220
H	3.300	3.700	0.130	0.146
I	3.900	4.300	0.154	0.169
J	0.500	0.700	0.020	0.028
K	2.800	3.200	0.110	0.126
L	1.000	1.400	0.039	0.055
M	2.200	2.600	0.087	0.102
N	7.000	7.200	0.276	0.283
O	4.900	5.300	0.193	0.209
P	1.800	2.200	0.071	0.087
Q	5.700	5.900	0.224	0.232
R	0.800	1.200	0.031	0.047
S	17.000	17.800	0.669	0.701
T	13.600	14.200	0.535	0.559