

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
500V	330mΩ@10V	20A

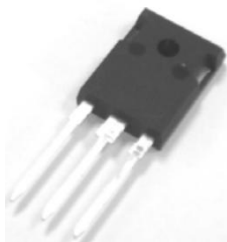
Feature

- Self-aligned planar technology
- Low conduction loss
- Gate switch performance

Application

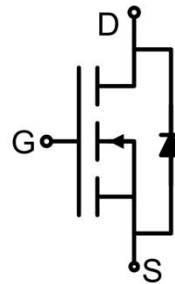
- Uninterruptible power supply(UPS)
- Power factor correction (PFC)

Package



TO-247AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0)	V _{DS}	500	V
Gate-Source Voltage	V _{GS}	±30	V
Continuous Drain Current	I _D	20	A
Pulsed Drain Current ¹⁾	I _{DM}	72	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	662	mJ
Power Dissipation ³⁾	P _D	34	W
Thermal Resistance, Junction-to-Case	R _{θJC}	3.68	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=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	500			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =500V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3	3.2	5	V
Drain-source on-resistance ⁴⁾	R _{DS(on)}	V _{GS} =10V, I _D =9A		250	330	mΩ
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		2219		pF
Output Capacitance	C _{oss}			321		
Reverse Transfer Capacitance	C _{rss}			6.6		
Total Gate Charge	Q _g	V _{DS} =250V, V _{GS} =10V, I _D =18A		38		nC
Gate-Source Charge	Q _{gs}			12		
Gate-Drain Charge	Q _{gd}			13		
Turn-on delay time	t _{d(on)}	V _{DS} =250V, I _D =18A, R _G =25Ω		34		nS
Turn-on rise time	t _r			46		
Turn-off delay time	t _{d(off)}			89		
Turn-off fall time	t _f			41		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _c =25℃			20	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =18A			1.4	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =18A		337		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs		4.3		μC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The EAS data shows Max. rating . L=4.1mH, I_{AS}=18A, V_{DD}=50V, R_G=25Ω, Starting T_J = 25 °C.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

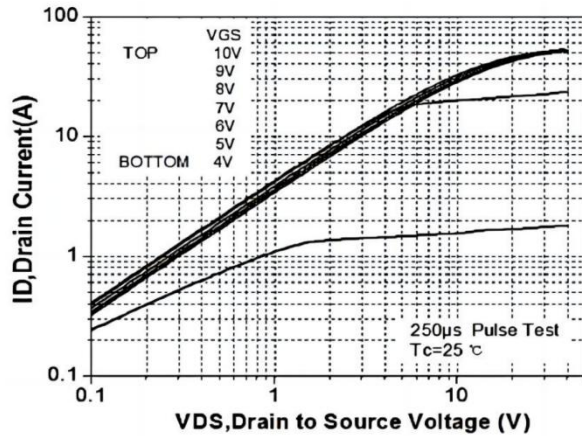


Figure 1. On-Region Characteristics

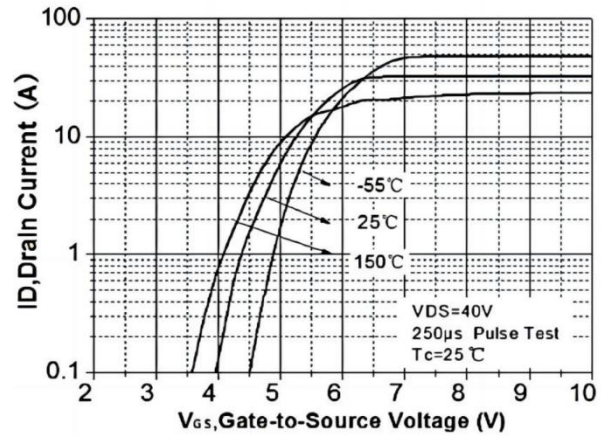


Figure 2. Transfer Characteristics

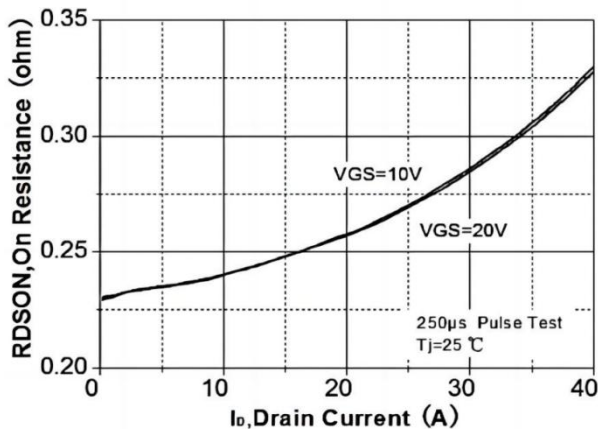


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

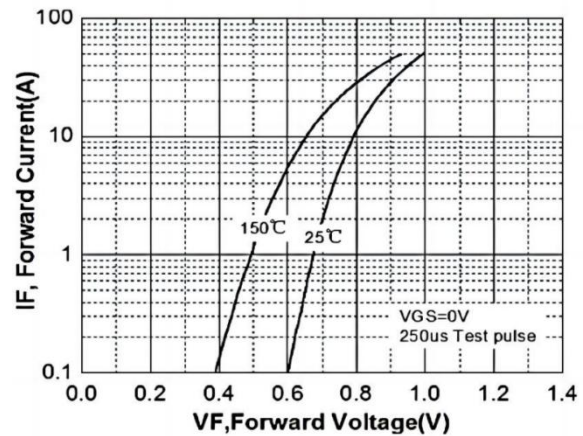


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

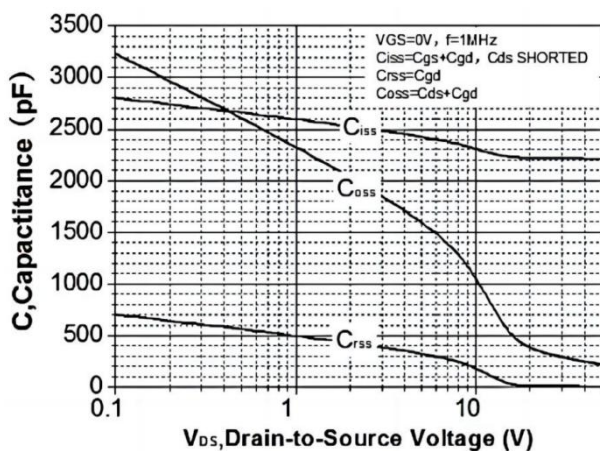


Figure 5. Capacitance Characteristics

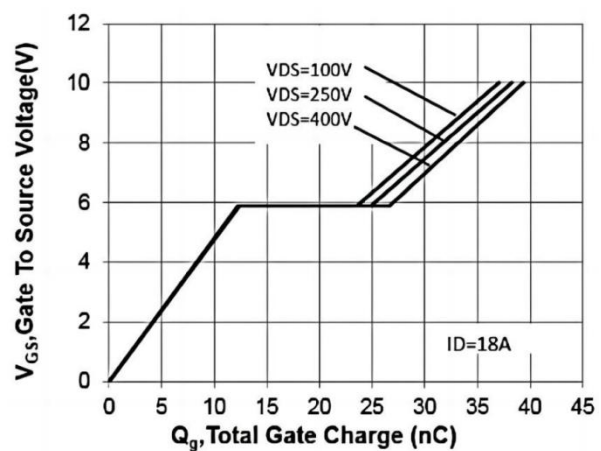
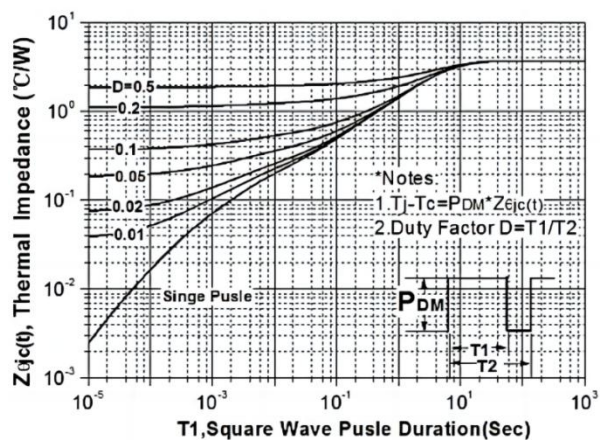
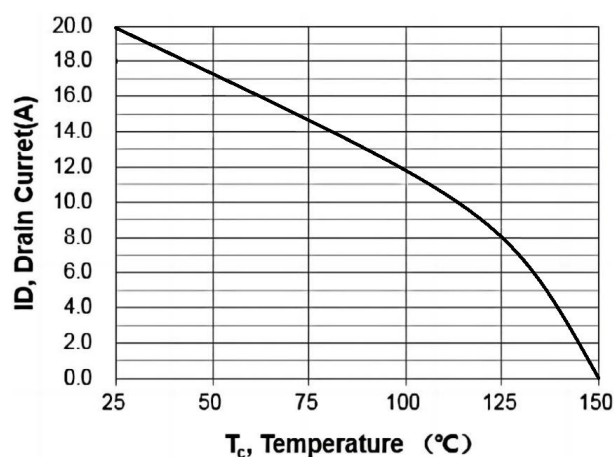
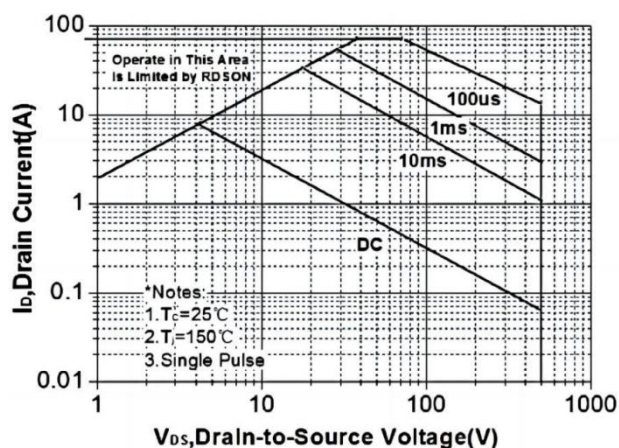
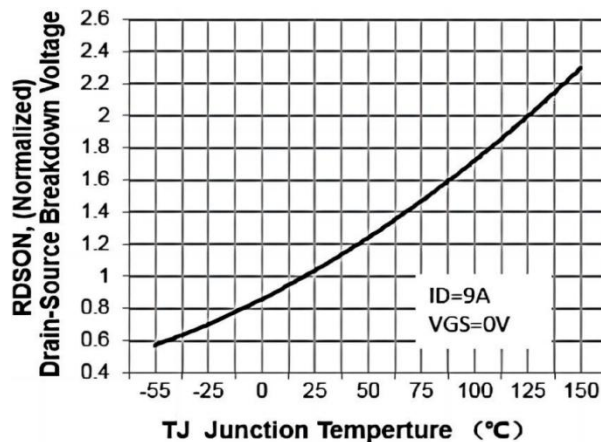
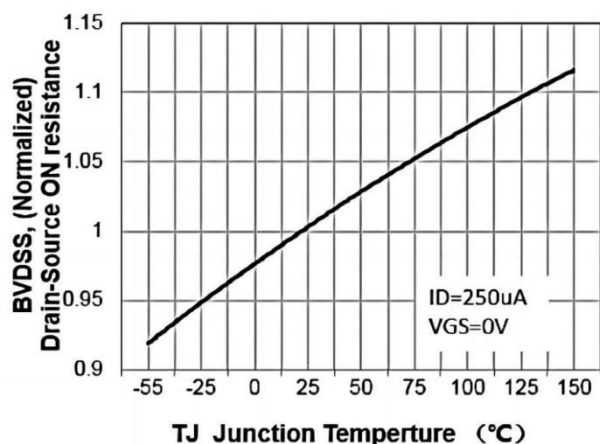
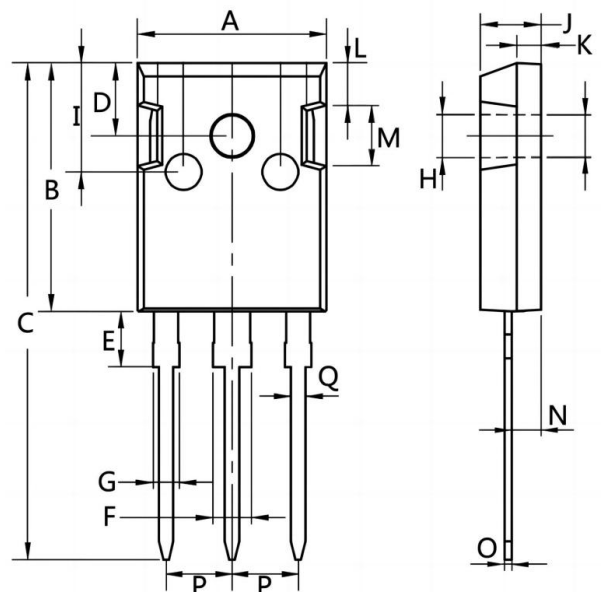


Figure 6. Gate Charge Characteristics

Typical Characteristics



TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	15.000	16.000	0.591	0.630
B	20.000	21.000	0.787	0.827
C	41.000	42.000	1.614	1.654
D	5.000	6.000	0.197	0.236
E	4.000	5.000	0.157	0.197
F	2.500	3.500	0.098	0.138
G	1.750	2.500	0.069	0.098
H	3.000	3.500	0.118	0.138
I	8.000	10.000	0.315	0.394
J	4.900	5.100	0.193	0.201
K	1.900	2.100	0.075	0.083
L	3.500	4.000	0.138	0.157
M	4.750	5.250	0.187	0.207
N	2.000	3.000	0.079	0.118
O	0.550	0.750	0.022	0.030
P	5.080 BSC.		0.200 BSC.	
Q	1.200	1.300	0.047	0.051