

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	41mΩ@10V	70A

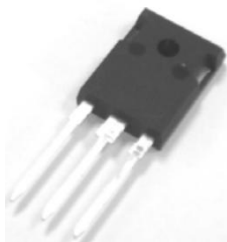
Feature

- Low on-resistance
- Low gate charge

Application

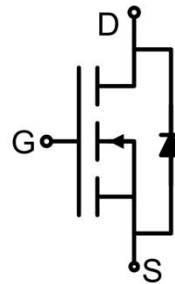
- Power factor correction (PFC)
- Uninterruptible Power Supply (UPS)

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} =0V)	V _{DS}	650	V
Gate-Source Voltage	V _{GS}	±30	V
Continuous Drain Current	I _D	70	A
Pulsed Drain Current ¹⁾	I _{DM}	230	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	4469	mJ
Power Dissipation ³⁾	P _D	500	W
Thermal Resistance Junction to Case	R _{θJC}	0.25	°C/W
Operating Junction Temperature	T _J	-55 ~ +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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=1mA$	650			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$			3	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	4		5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		38	41	m Ω
Dynamic characteristics ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=100V, V_{GS}=0V, f=1MHz$		7510		pF
Output Capacitance	C_{oss}			224		
Reverse Transfer Capacitance	C_{rss}			32		
Total Gate Charge	Q_g	$V_{DS}=380V, V_{GS}=4.5V$ $I_D=38A$		179		nC
Gate-Source Charge	Q_{gs}			41		
Gate-Drain Charge	Q_{gd}			80		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=380V, V_{GS}=10V$ $I_D=38A, R_G=4.7\Omega$		54		nS
Turn-on rise time	t_r			66		
Turn-off delay time	$t_{d(off)}$			174		
Turn-off fall time	t_f			47		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				70	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_F=1A$			1.08	V
Reverse Recovery Time	T_{rr}	$I_F=30A, di/dt=100A/\mu s$		205		nS
Reverse Recovery Charge	Q_{rr}			1477		nC

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=0.5mH, I_{AS} = 3.2A, V_{DD} = 50V, R_G = 25Ω.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

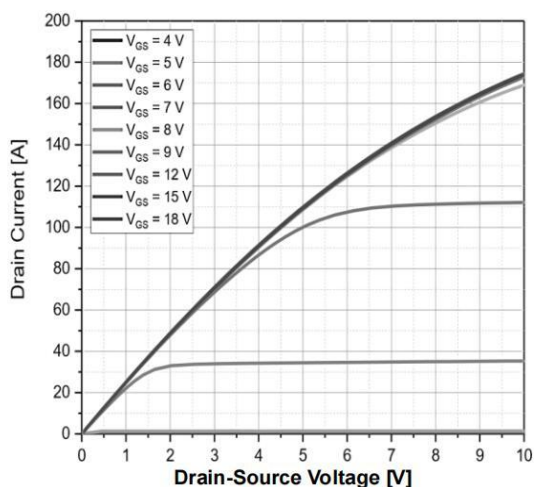


Figure1: 1: Typ. output characteristics

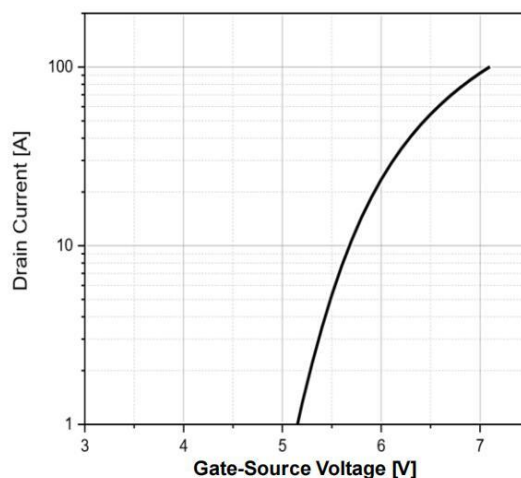


Figure2: transfer characteristics

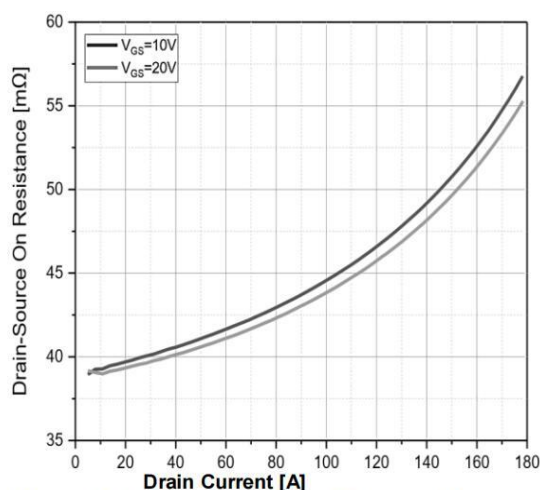


Figure3 drain-source on-state resistance

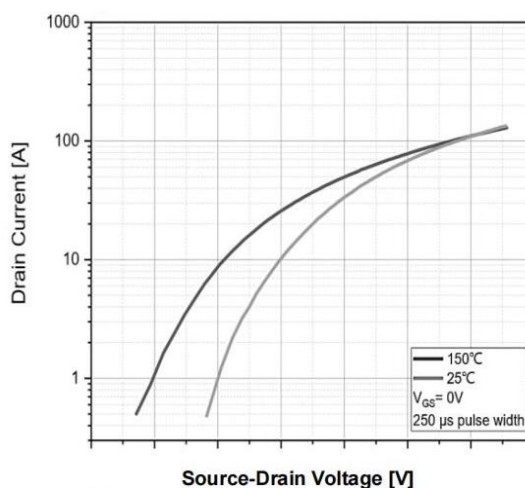


Figure4 Forward characteristics of reverse diode

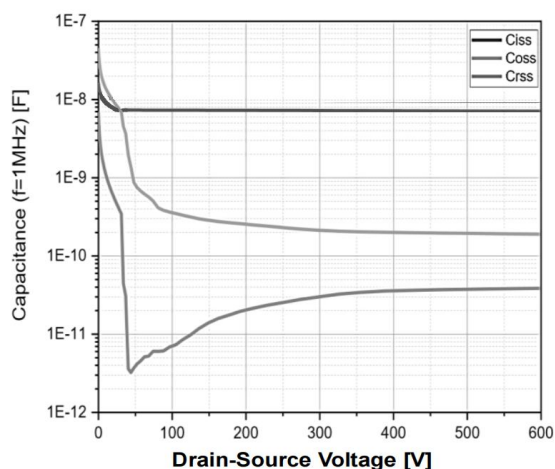


Figure5 Typ. Capacitances

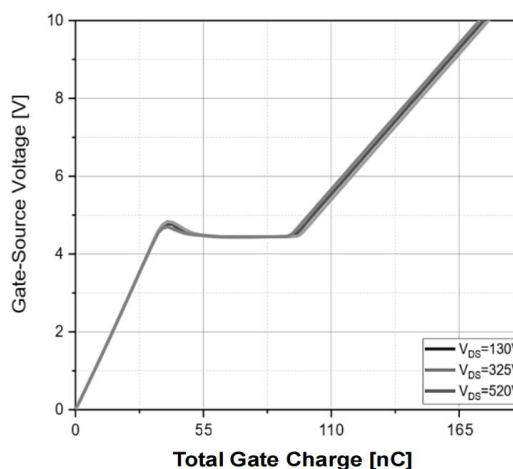
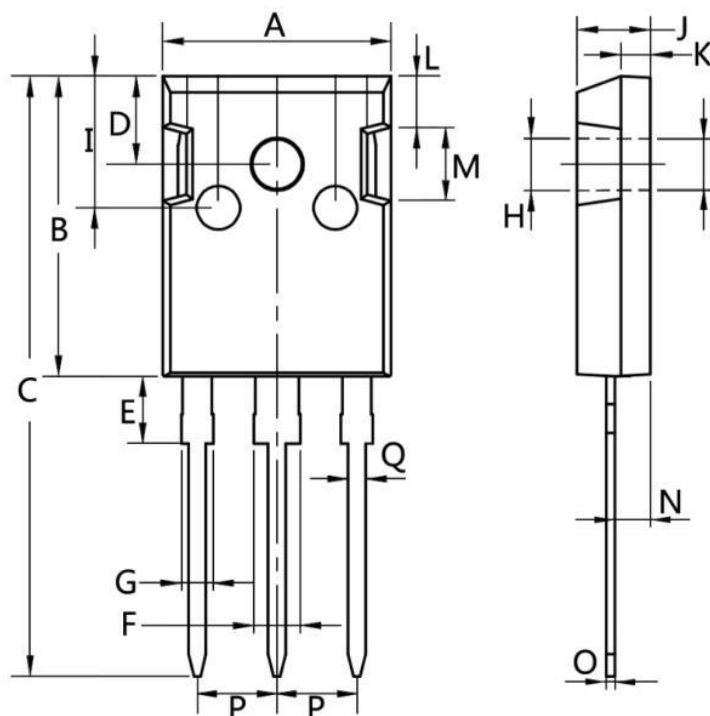


Figure6 Typ. gate charge

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	5.440 BSC.		0.214 BSC.	
Q	1.200	1.300	0.047	0.051