

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	$1.2\Omega@10V$	3.8A

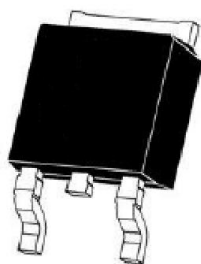
Feature

- Optimized body diode reverse recovery performance
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

Application

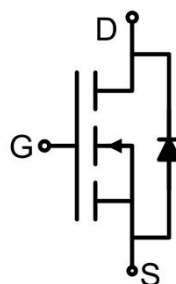
- Power Factor Correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)
- LLC Half-bridge

Package



TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	650	V
Gate-Source Voltage (V _{DS} =0V) AC (f>1 Hz)	V _{GS}	±30	V
Gate-Source Voltage (V _{DS} =0V) DC	V _{GS}	±20	V
Continuous Drain Current	I _D	3.8	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	2.66	A
Pulsed Drain Current ¹⁾	I _{DM}	11.4	A
Power Dissipation	P _D	46	W
Thermal Resistance Junction to Case	R _{θJC}	3.26	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature	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	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _C =25℃			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	3		4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =1.9A		1.05	1.2	Ω
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		316		pF
Output Capacitance	C _{oss}			12		
Reverse Transfer Capacitance	C _{rss}			5		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =2A		10		nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			7.5		
Turn-on delay time	t _{d(on)}	V _{DS} =480V, V _{GS} =10V, I _D =2A R _G =4Ω		8		nS
Turn-on rise time	t _r			10		
Turn-off delay time	t _{d(off)}			41		
Turn-off fall time	t _f			9		
Source-Drain Diode characteristics						
Diode Continuous Current	I _S	T _C =25℃			3.8	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =3.8A, T _J =25℃			1.2	V
Reverse recovery time	T _{rr}	I _F =2A, di/dt =100 A/μs T _J =25℃		185		nS
Reverse recovery charge	Q _{rr}			0.55		μC
Peak reverse recovery current	I _{rrm}			6		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature

2) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Safe operating area

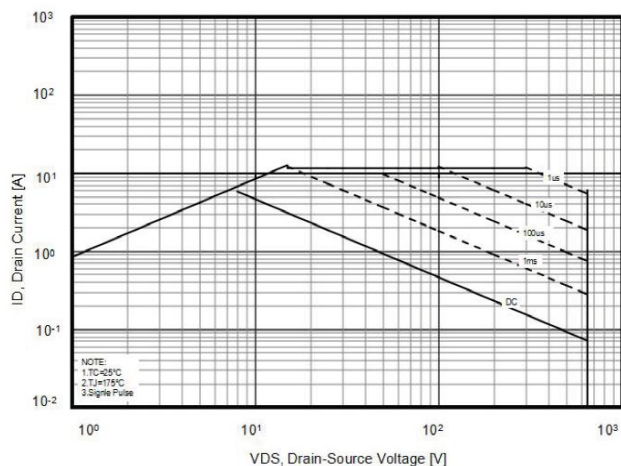


Figure2. Source-Drain Diode Forward Voltage

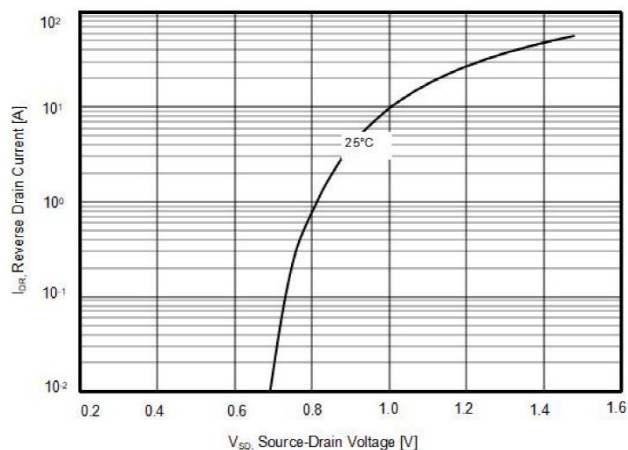


Figure3. Output characteristics

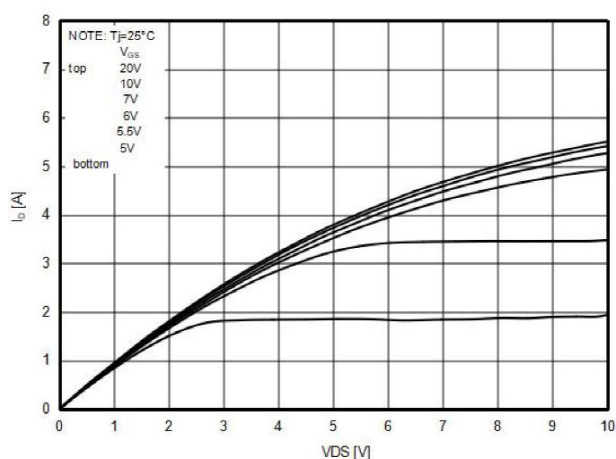


Figure4. Transfer characteristics

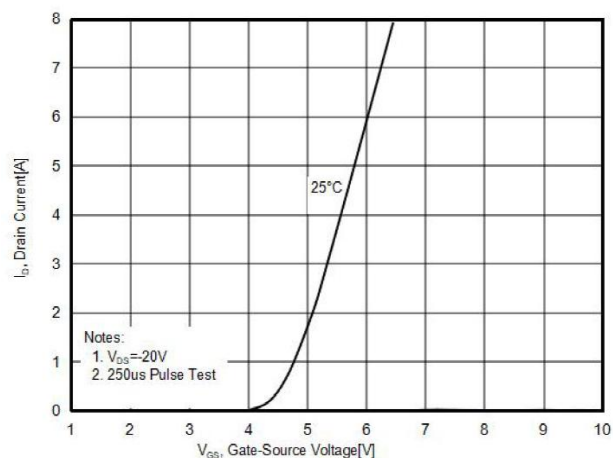


Figure5. Static drain-source on resistance

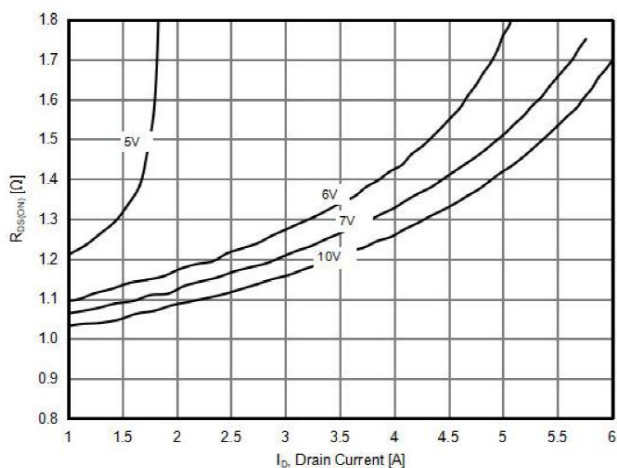
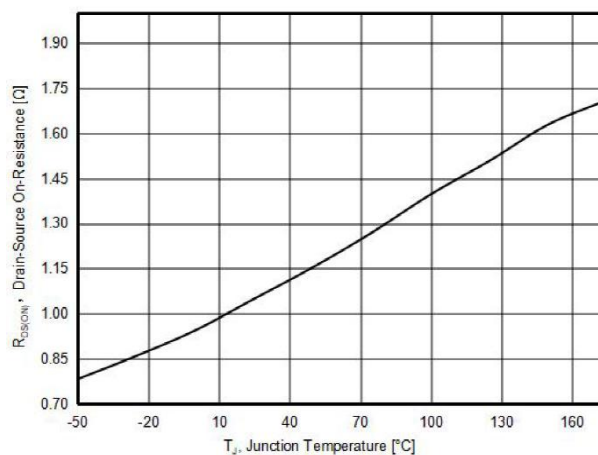


Figure6. $R_{DS(ON)}$ vs Junction Temperature



Typical Characteristics

Figure7. BV_{DSS} vs Junction Temperature

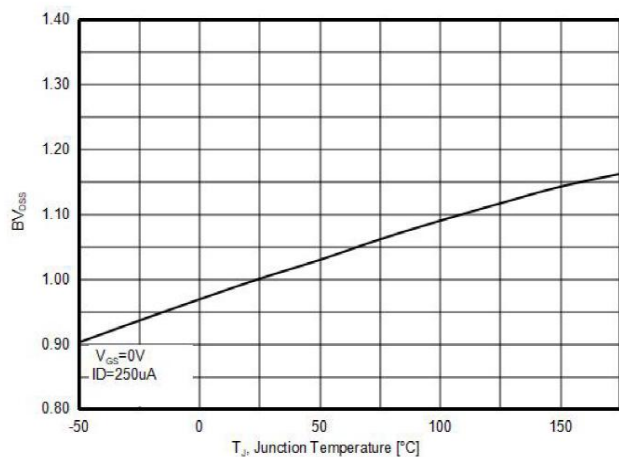


Figure8. Maximum I_D vs Junction Temperature

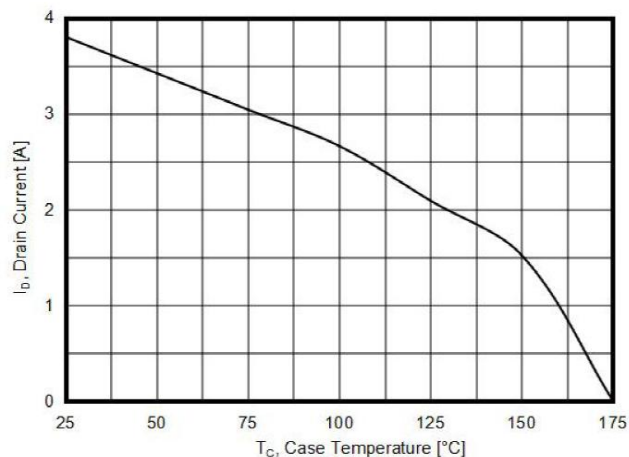


Figure9. Gate charge waveforms

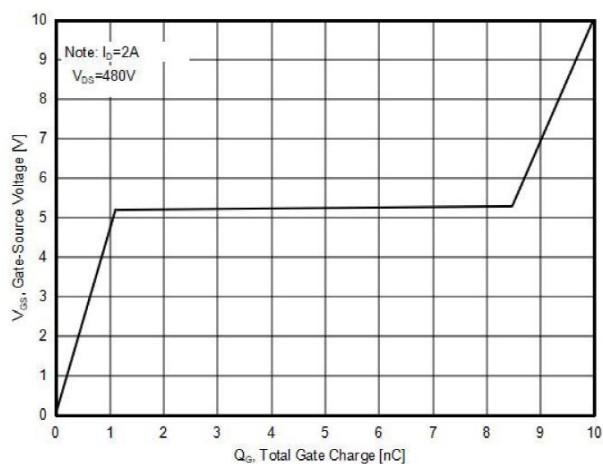
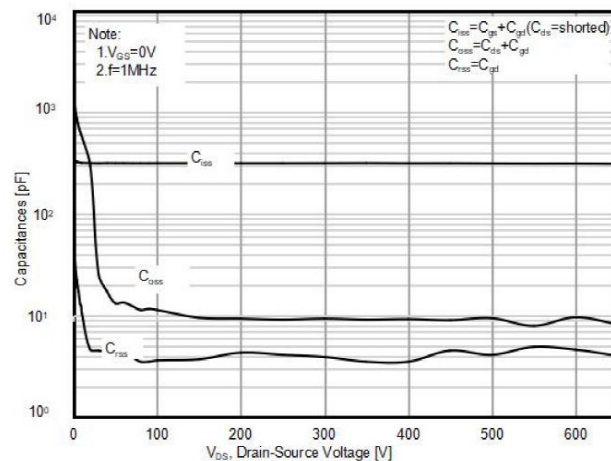
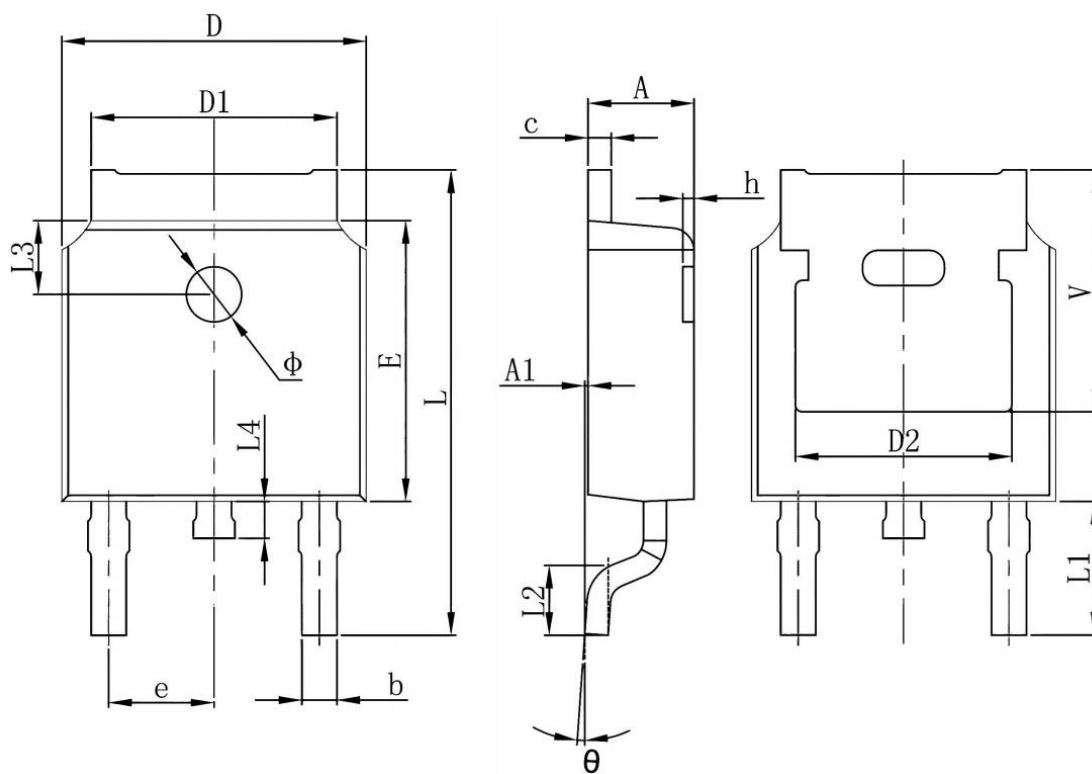


Figure10. Capacitance



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.190	2.390	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
phi	1.100	1.300	0.043	0.051
theta	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	