

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	$4.8\Omega@10V$	2A

Feature

- Self-aligned planar technology
- Low conduction loss

Application

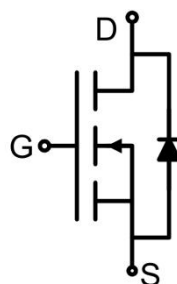
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Package



TO-251AB

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	2	A
Pulsed Drain Current	I _{DM}	6	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	57	mJ
Power Dissipation	P _D	25	W
Thermal Resistance Junction to Case	R _{θJC}	5	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°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 _J =25℃			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		4	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =1A		4	4.8	Ω
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		310		pF
Output Capacitance	C _{oss}			39		
Reverse Transfer Capacitance	C _{rss}			6		
Total Gate Charge	Q _g	V _{DS} =520V, V _{GS} =10V, I _D =2A		8		nC
Gate-Source Charge	Q _{gs}			1.2		
Gate-Drain Charge	Q _{gd}			5		
Turn-on delay time	t _{d(on)}	V _{DS} =300V, I _D =2A, R _G =25Ω		7.8		nS
Turn-on rise time	t _r			33		
Turn-off delay time	t _{d(off)}			23		
Turn-off fall time	t _f			59		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25℃			2	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =2A, T _J =25℃			1.4	V
Reverse recovery time	T _{rr}	V _{GS} =0V, I _S =2A		80		nS
Reverse recovery charge	Q _{rr}	di/dt =100A/μs		1.8		μC

Notes:

- 1) I_{AS} = 2.4A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C.
- 2) Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

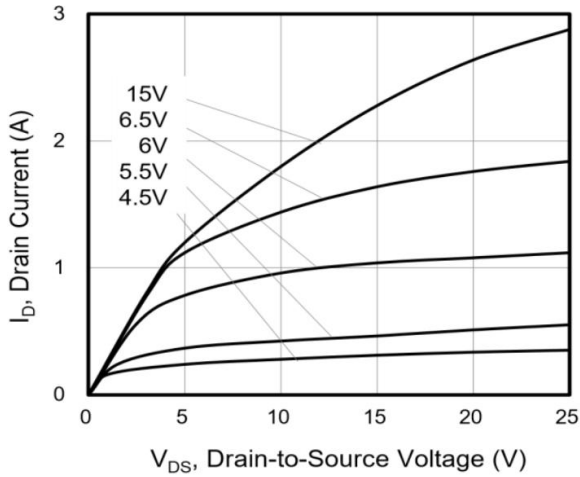


Figure 2. Body Diode Forward Voltage

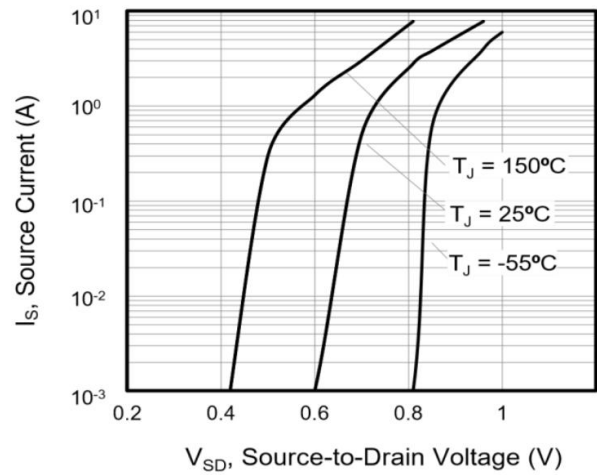


Figure 3. Drain Current vs. Temperature

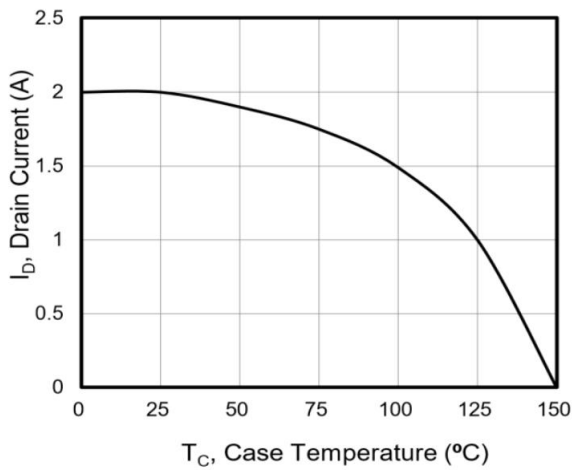


Figure 4. Power Dissipation vs. Temperature

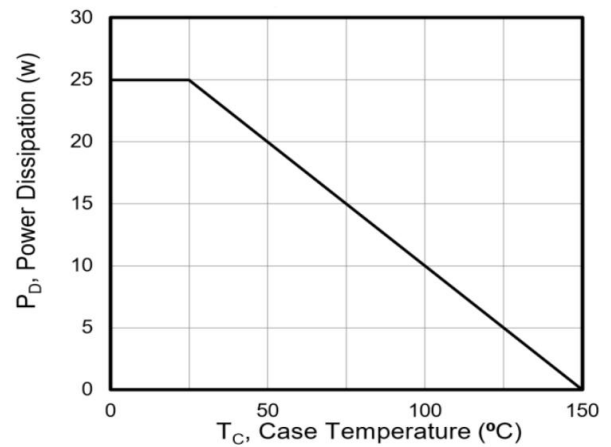


Figure 5. Transfer Characteristics

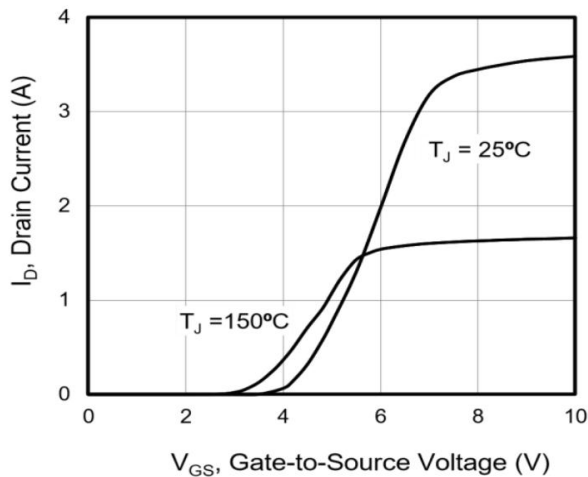
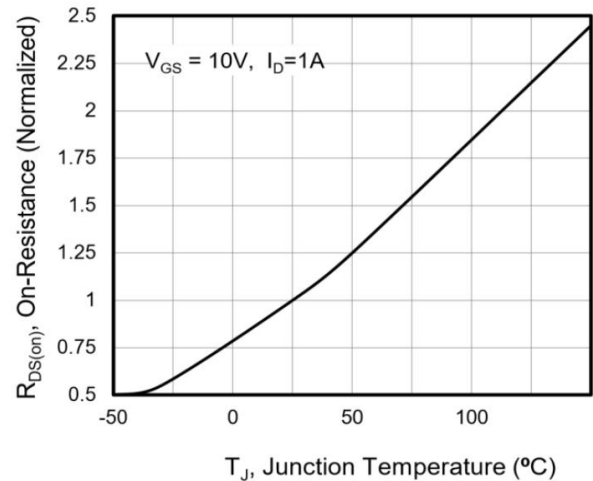


Figure 6. On-Resistance vs. Temperature



Typical Characteristics

Figure 7. Capacitance

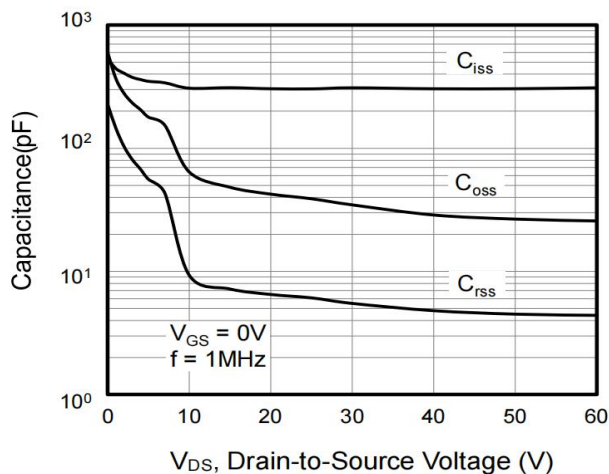


Figure 8. Gate Charge

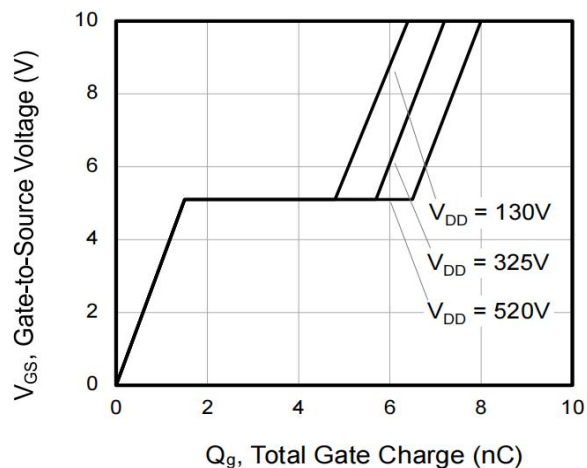
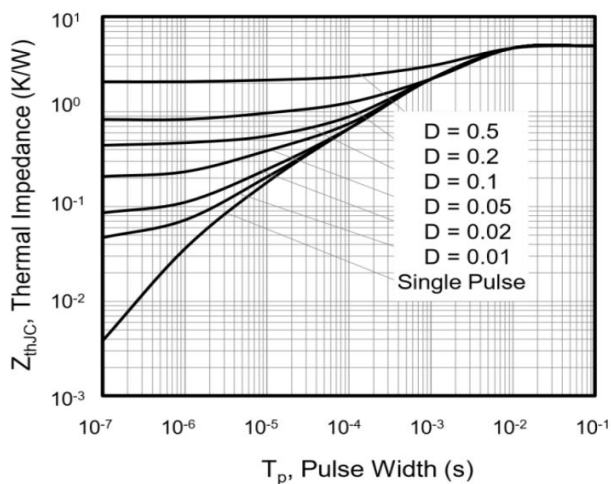
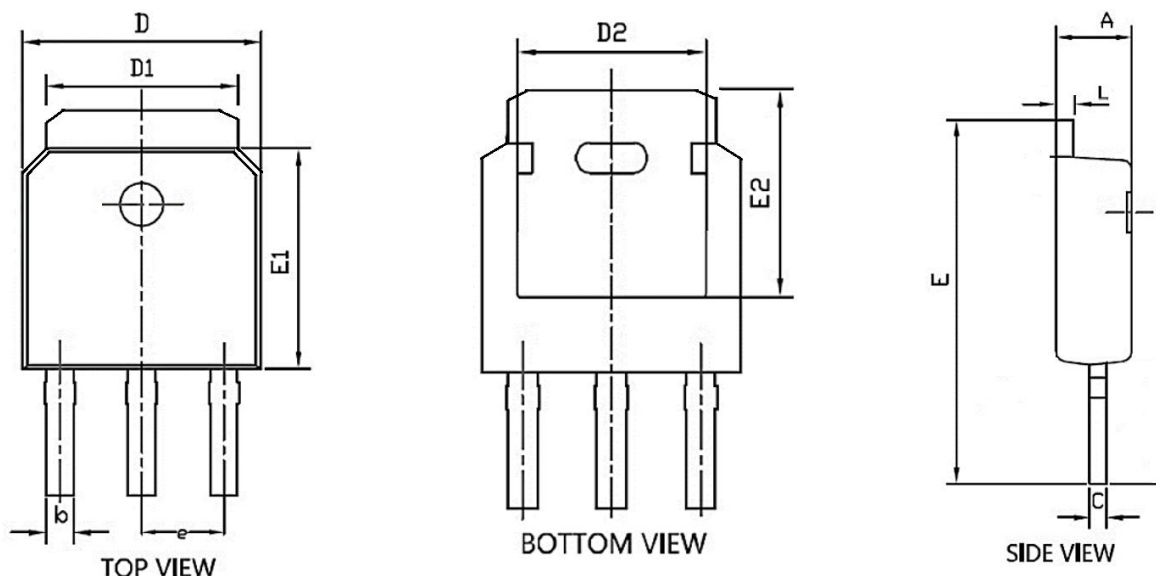


Figure 9. Transient Thermal Impedance



TO-251AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
b	0.660	0.860	0.026	0.034
C	0.440	0.580	0.017	0.023
D	6.400	6.800	0.252	0.268
D1	5.150	5.480	0.203	0.216
D2	4.830 REF.		0.190 REF.	
E	10.600	11.800	0.417	0.465
E1	5.900	6.300	0.232	0.248
E2	5.300 REF.		0.209 REF.	
e	2.190	2.390	0.086	0.094
L	0.440	0.580	0.017	0.023