

Product Summary

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

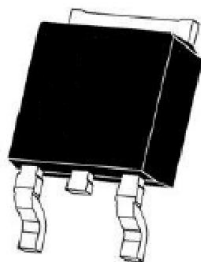
Feature

- Self-aligned planar technology
- Low conduction loss

Application

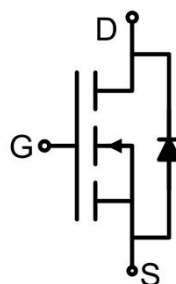
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Package

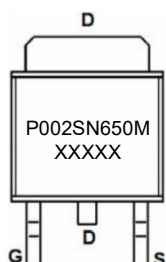


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0\text{V}$)	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ¹⁾	I_D	2	A
Pulsed Drain Current ³⁾	I_{DM}	6	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	57	mJ
Power Dissipation	P_D	25	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	5	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_A=25^{\circ}\text{C}$ 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°C			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 ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =1A		4	4.8	Ω
Dynamic characteristics ⁴⁾						
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°C			2	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =2A, T _J =25°C			1.4	V
Reverse recover time	T _{rr}	V _{GS} =0V, I _S =2A di/dt =100A/us		80		nS
Reverse recovery charge	Q _{rr}			1.8		μC

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) $I_{AS}=2.4\text{A}, V_{DD}=50\text{V}, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
- 3) Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1\%$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

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

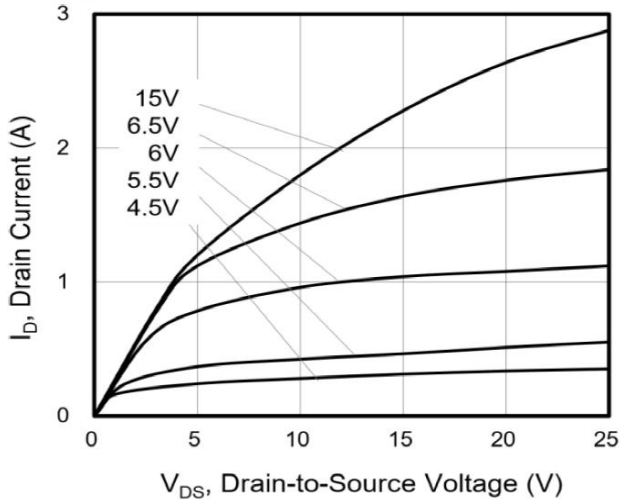


Figure 2. Body Diode Forward Voltage

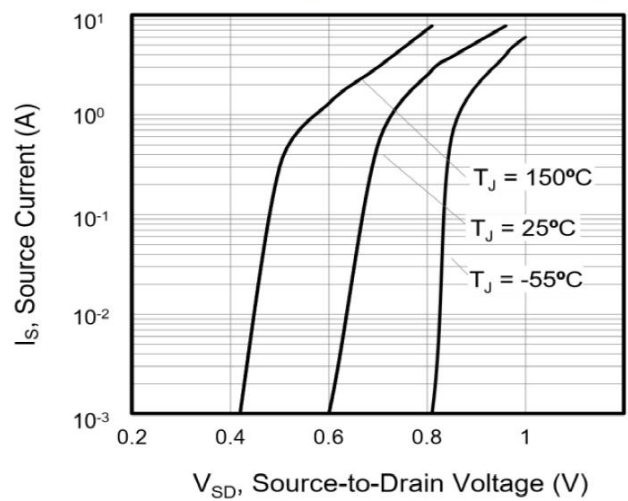


Figure 3. Drain Current vs. Temperature

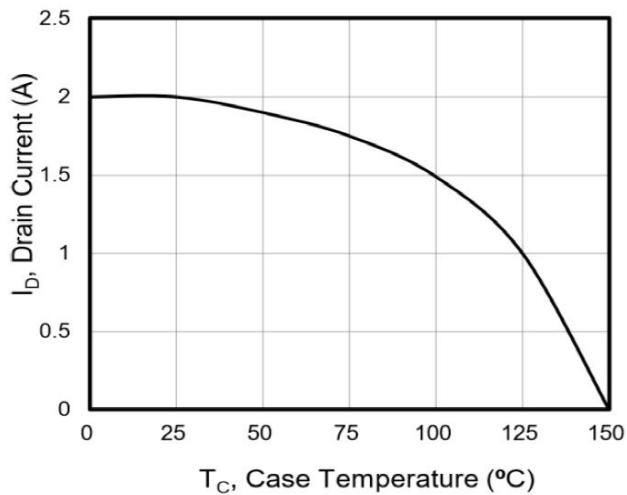


Figure 4. Power Dissipation vs. Temperature

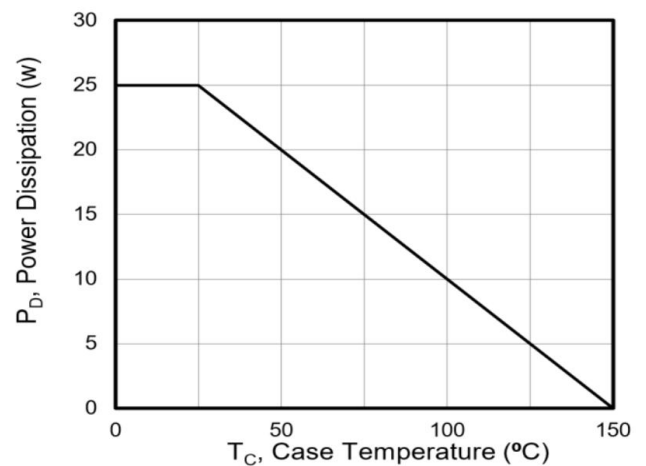


Figure 5. Transfer Characteristics

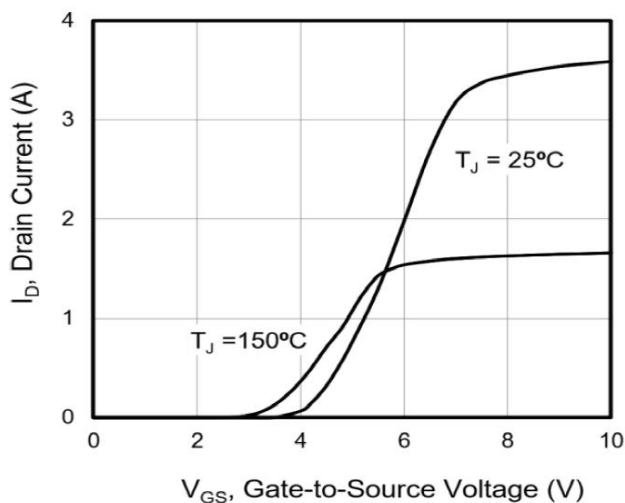
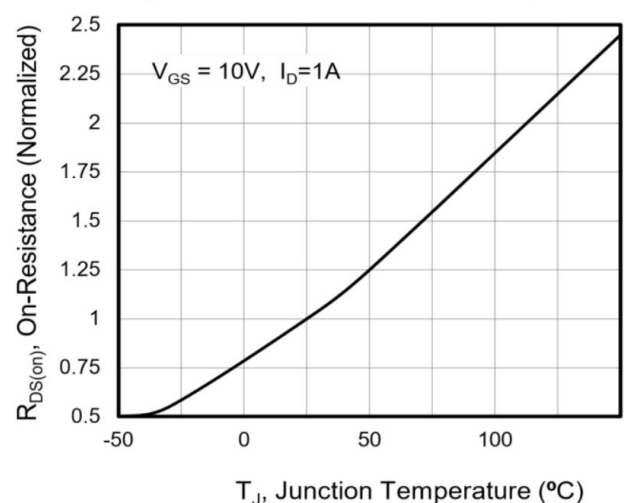


Figure 6. On-Resistance vs. Temperature



Typical Characteristics

Figure 7. Capacitance

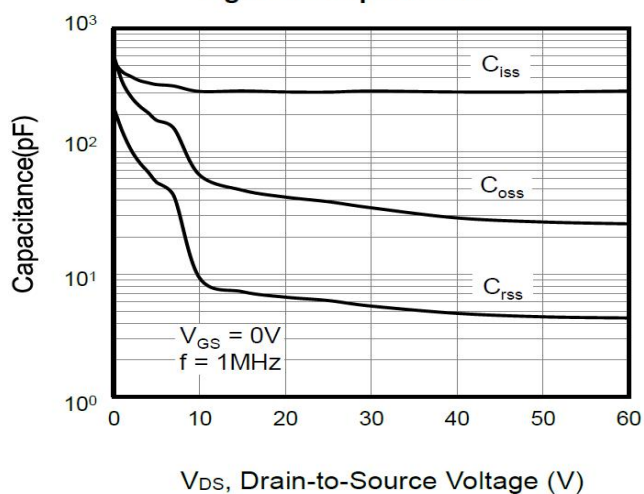


Figure 8. Gate Charge

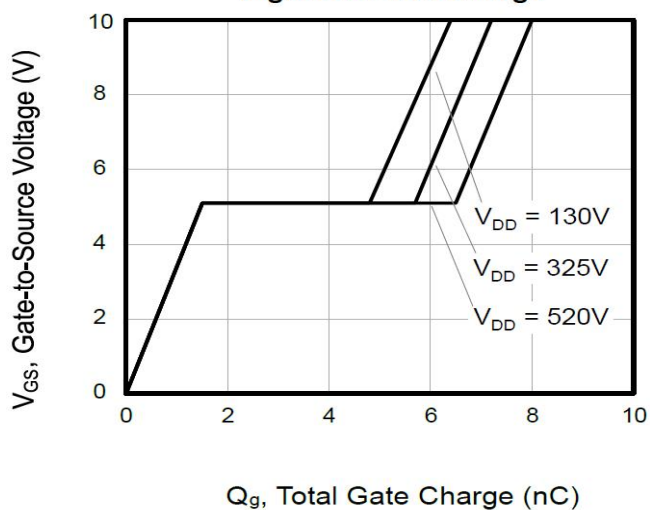
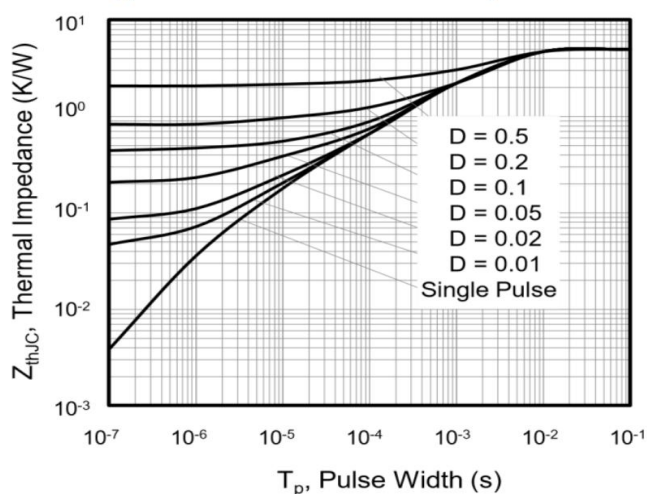
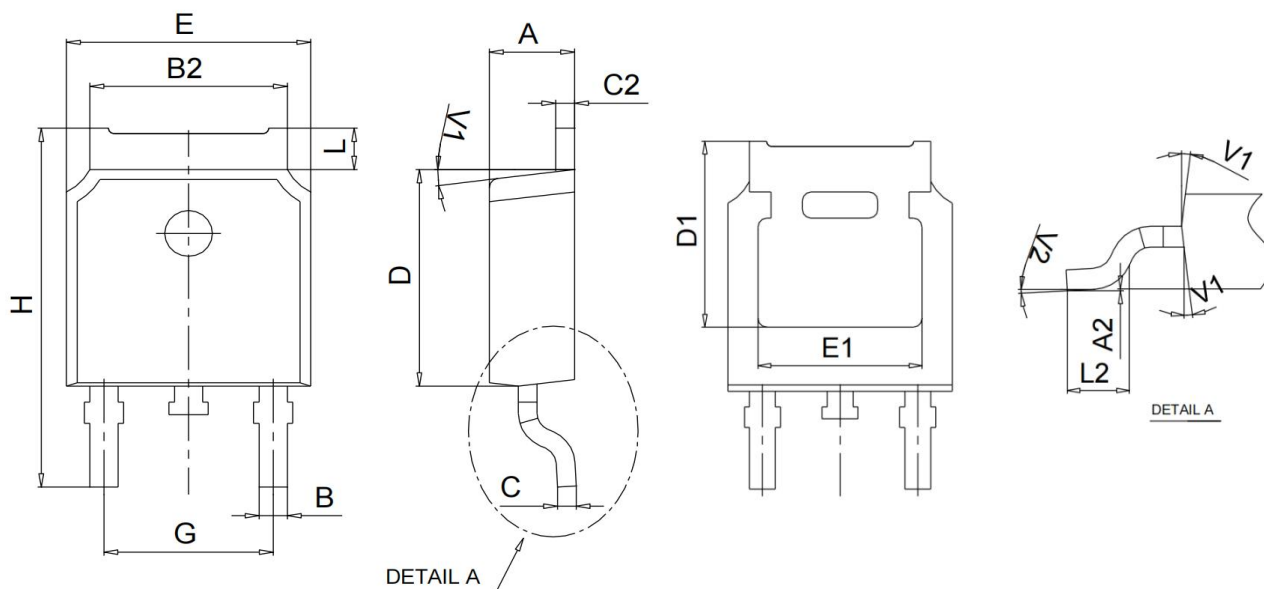


Figure 9. Transient Thermal Impedance



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
A2	0.000	0.100	0.000	0.004
B	0.660	0.860	0.026	0.034
B2	5.180	5.480	0.202	0.216
C	0.400	0.600	0.016	0.024
C2	0.440	0.580	0.017	0.023
D	5.900	6.300	0.232	0.248
D1	5.300 REF.		0.209 REF.	
E	6.400	6.800	0.252	0.268
E1	4.630	-	0.182	-
G	4.470	4.670	0.176	0.184
H	9.500	10.700	0.374	0.421
L	1.090	1.210	0.043	0.048
L2	1.350	1.650	0.053	0.065
V1	7° BSC.		7° BSC.	
V2	0°	6°	0°	6°