

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	$1.2\Omega@10V$	7A

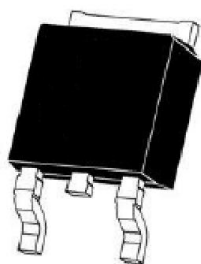
Feature

- Self-aligned planar technology
- Low conduction loss

Application

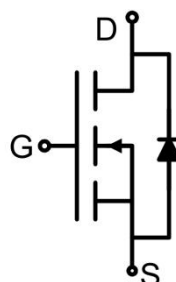
- Uninterruptible power supply (UPS)
- Power factor correction (PFC)

Package

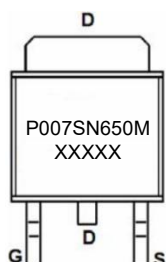


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (T_C=25°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	7	A
Pulsed Drain Current ¹⁾	I _{DM}	28	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	247	mJ
Power Dissipation ⁴⁾	P _D	32.9	W
Thermal Resistance Junction to Case	R _{θJC}	3.8	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	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	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =650V, 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	2		4	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =3.5A		1	1.2	Ω
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		1000		pF
Output Capacitance	C _{oss}			101		
Reverse Transfer Capacitance	C _{rss}			1.5		
Total Gate Charge	Q _g	V _{DS} =520V, V _{GS} =10V, I _D =7A		22		nC
Gate-Source Charge	Q _{gs}			4.3		
Gate-Drain Charge	Q _{gd}			13		
Turn-on delay time	t _{d(on)}	V _{DS} =325V, I _D =7A, R _G =25Ω		12		nS
Turn-on rise time	t _r			26		
Turn-off delay time	t _{d(off)}			29		
Turn-off fall time	t _f			27		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25°C			7	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =7A			1.4	V
Reverse recover time	T _{rr}	V _{GS} =0V, I _S =7A		389		nS
Reverse recovery charge	Q _{rr}	di/dt =100A/us		2.04		μC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The E_{AS} data shows Max. rating . I_{AS} = 4.5A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C.
- 3) The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

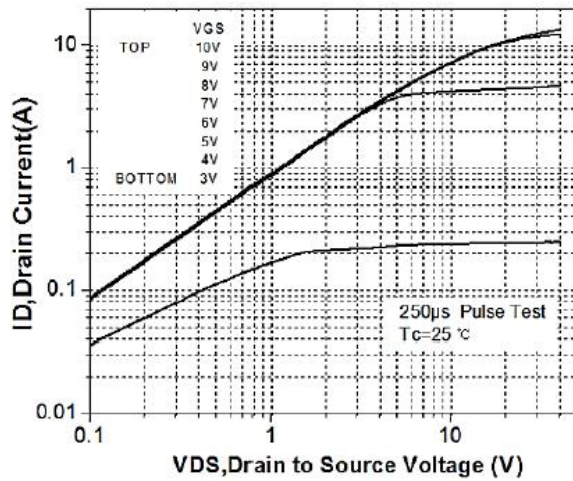


Figure 1. On-Region Characteristics

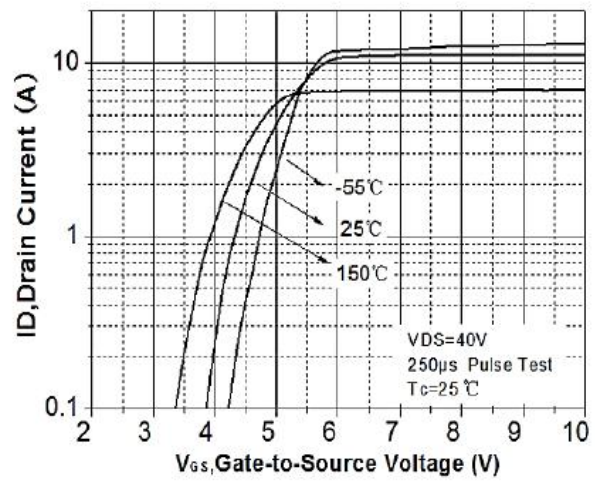


Figure 2. Transfer Characteristics

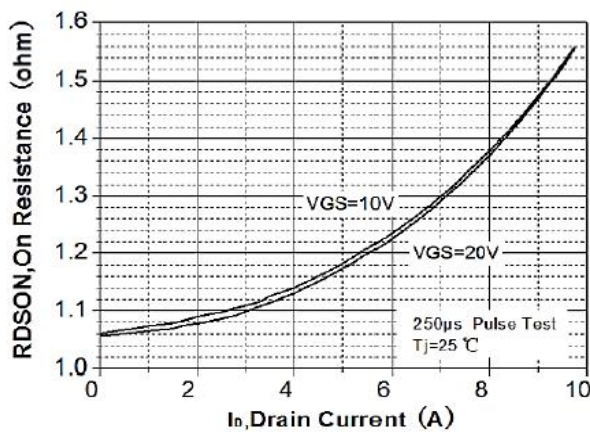


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

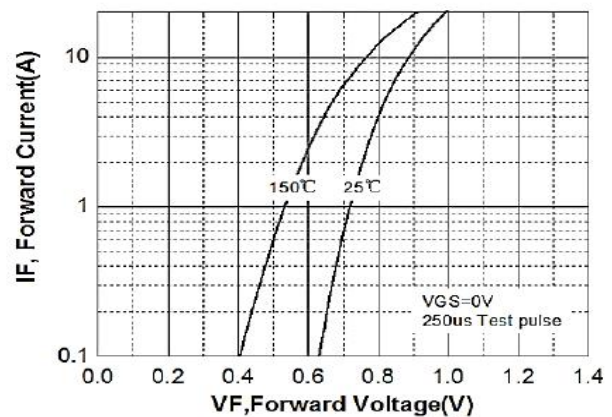


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

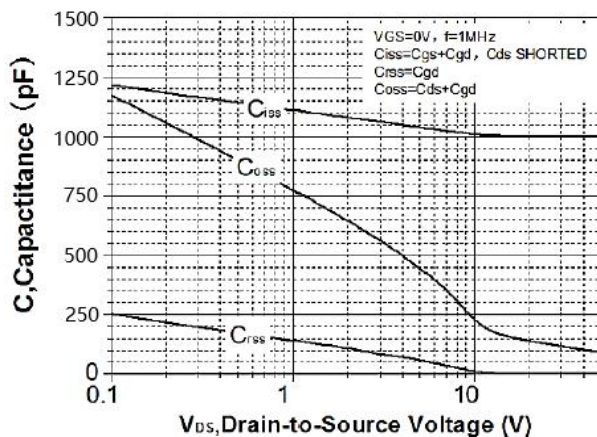


Figure 5. Capacitance Characteristics

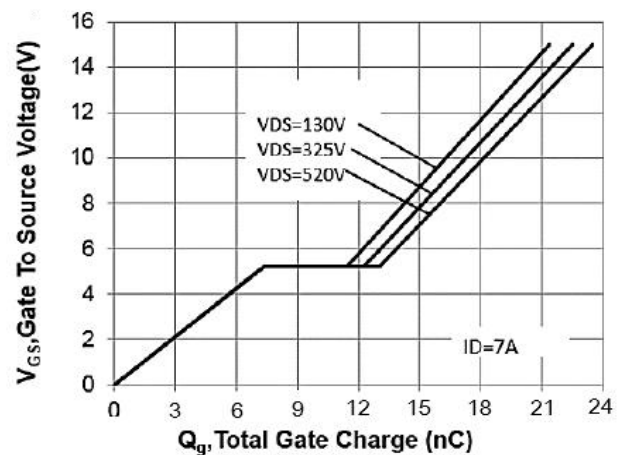


Figure 6. Gate Charge Characteristics

Typical Characteristics

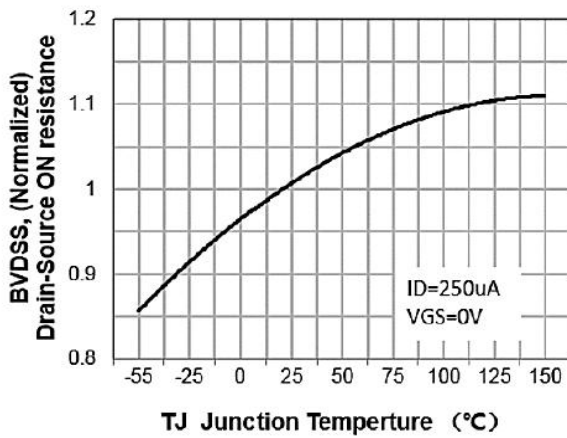


Figure 7. Breakdown Voltage Variation vs Temperature

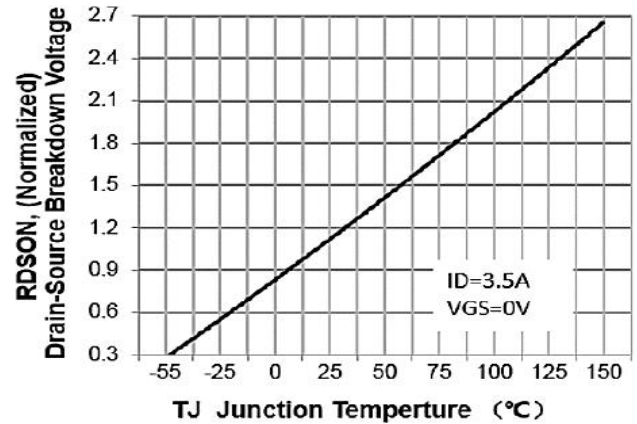


Figure 8. On-Resistance Variation vs Temperature

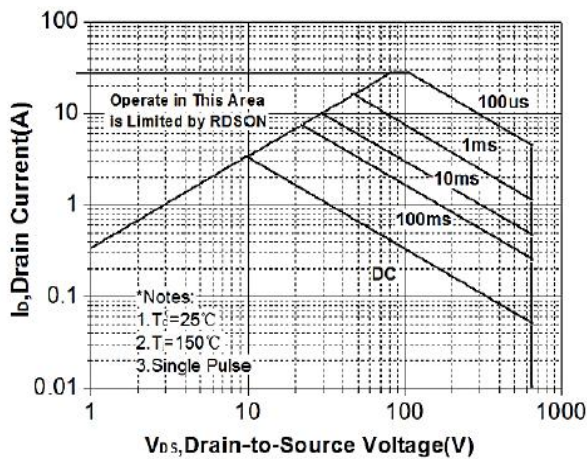


Figure 9. Maximum Safe Operating Area

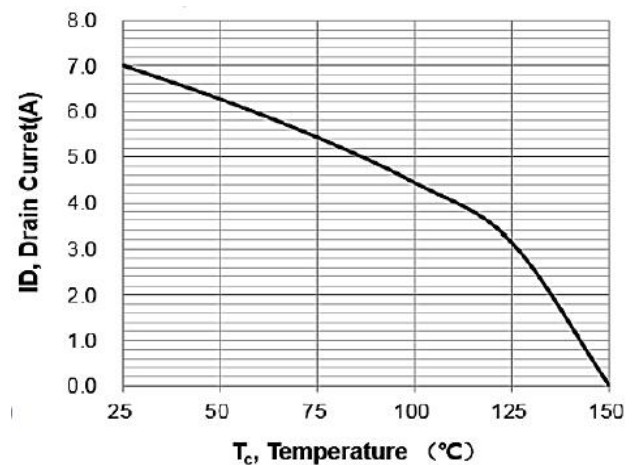


Figure 10. Maximum Drain Current vs Case Temperature

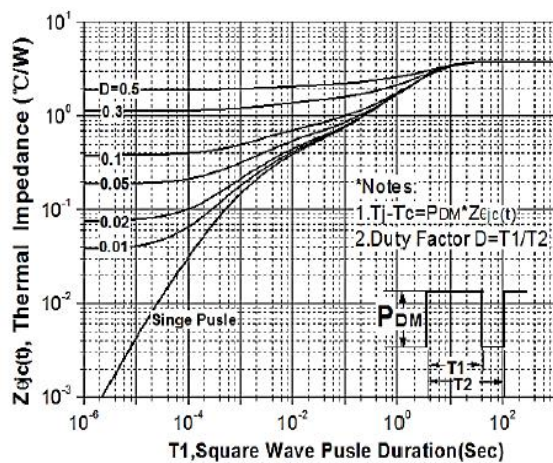
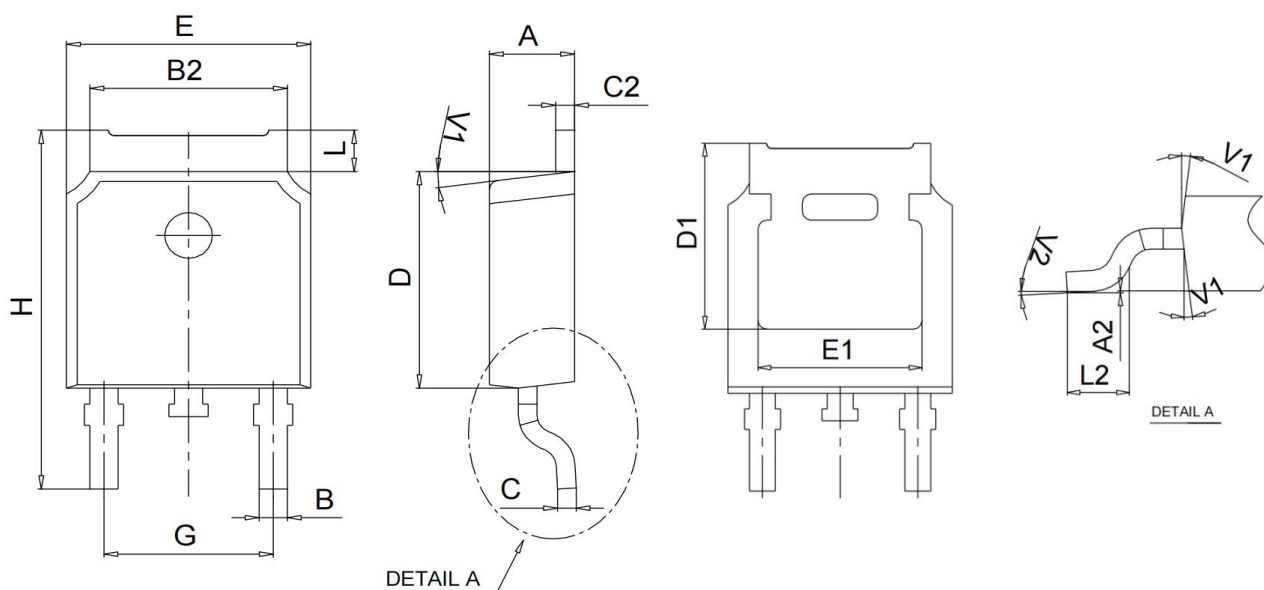


Figure 11. Transient Thermal Response Curve

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°