

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	1.2Ω@10V	4A

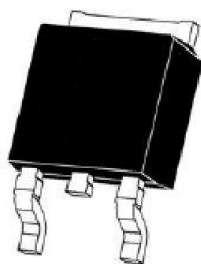
Feature

- Low on-resistance
- Low Gate Charge

Application

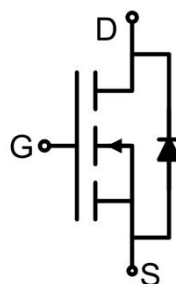
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)

Package

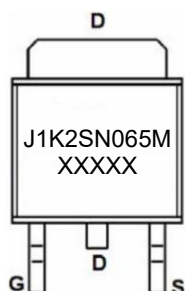


TO-252AB

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 _{GS}	±30	V
Continuous Drain Current	I _D	4	A
Pulsed Drain Current ¹⁾	I _{DM}	12	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	30	mJ
Power Dissipation ³⁾	P _D	28.5	W
Thermal Resistance Junction to Case	R _{θJC}	4.4	°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 =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	2.5	3.5	4.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =2A		1.0	1.2	Ω
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, f =1MHz		246		pF
Output Capacitance	C _{oss}			12		
Reverse Transfer Capacitance	C _{rss}			0.6		
Total Gate Charge	Q _g	V _{DS} =325V, V _{GS} =10V, I _D =4A		6.48		nC
Gate-Source Charge	Q _{gs}			1.42		
Gate-Drain Charge	Q _{gd}			2.78		
Turn-on delay time	t _{d(on)}	V _{DS} =325V, V _{GS} =10V, I _D =4A R _G =25Ω		11.6		nS
Turn-on rise time	t _r			10.5		
Turn-off delay time	t _{d(off)}			36		
Turn-off fall time	t _f			8.4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				4	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =4A			1.3	V
Reverse recovery time	T _{rr}	V _{GS} =0V, I _S =4A		147		nS
Reverse recovery charge	Q _{rr}	di/dt =100 A/μs		0.96		μC

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} =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.

Typical Characteristics

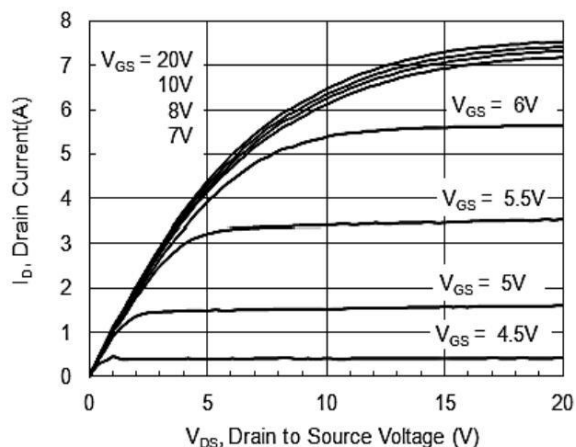


Figure1. Typical Output Characteristics

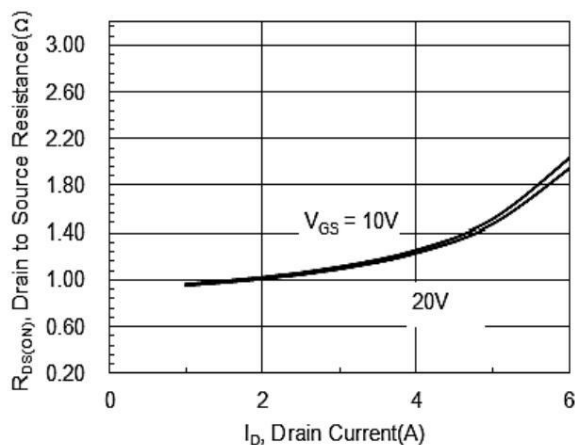


Figure2. Drain-source on-state resistance

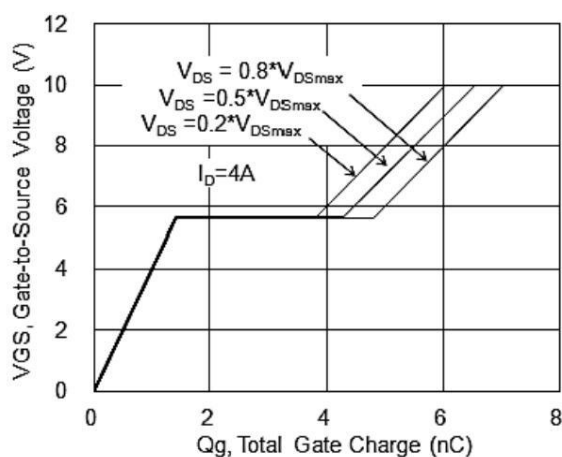


Figure3. Gate charge characteristics

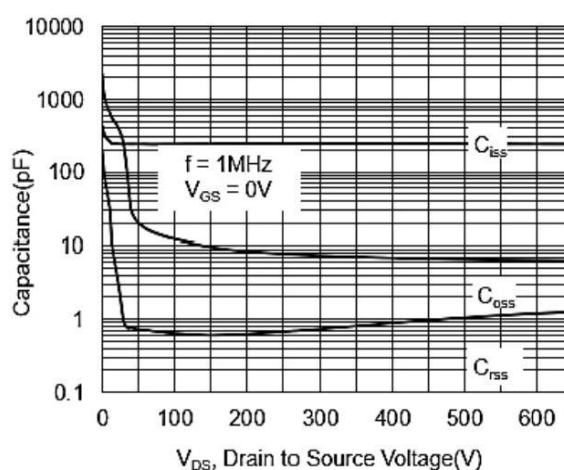


Figure4. Capacitance Characteristics

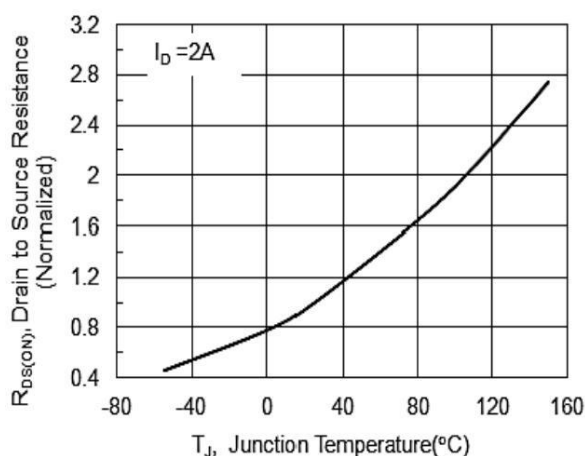


Figure5. RDS (ON) vs junction temperature

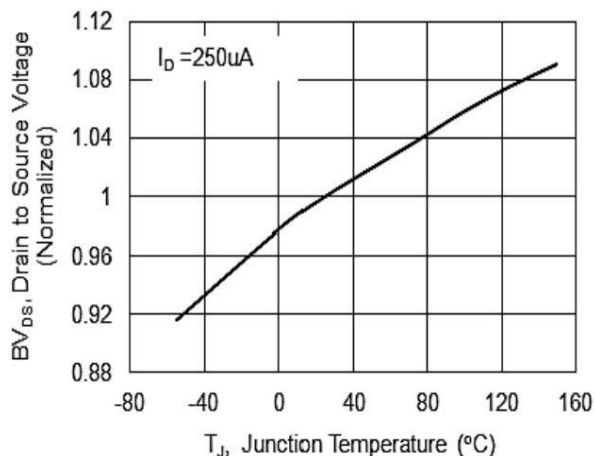


Figure6. BVDSS vs junction temperature

Typical Characteristics

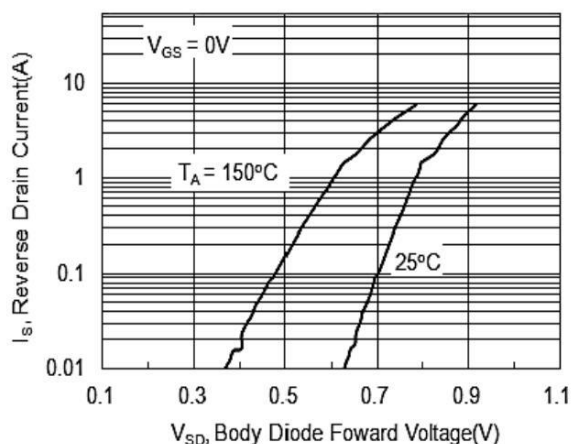


Figure 7. Forward characteristics of reverse diode

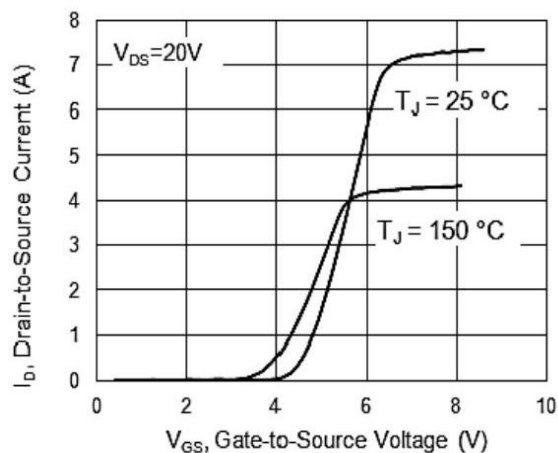


Figure 8. Transfer characteristics

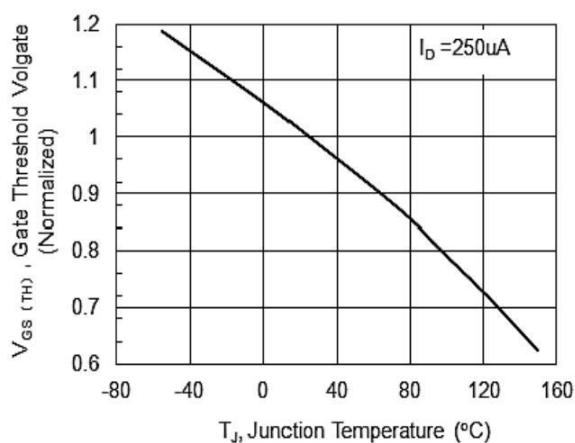


Figure 9. $V_{GS(TH)}$ vs junction temperature

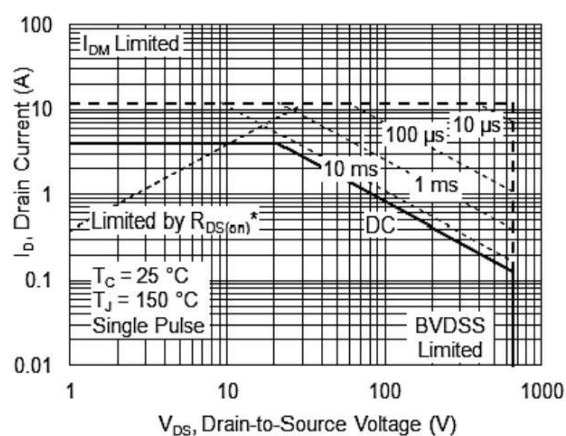


Figure 10. Safe operating area

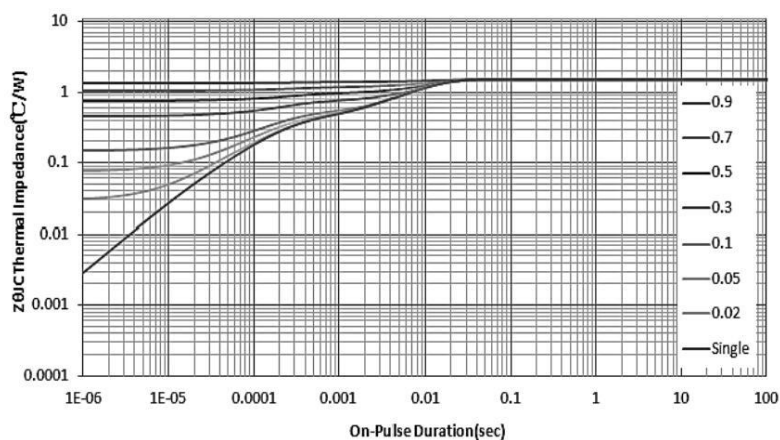
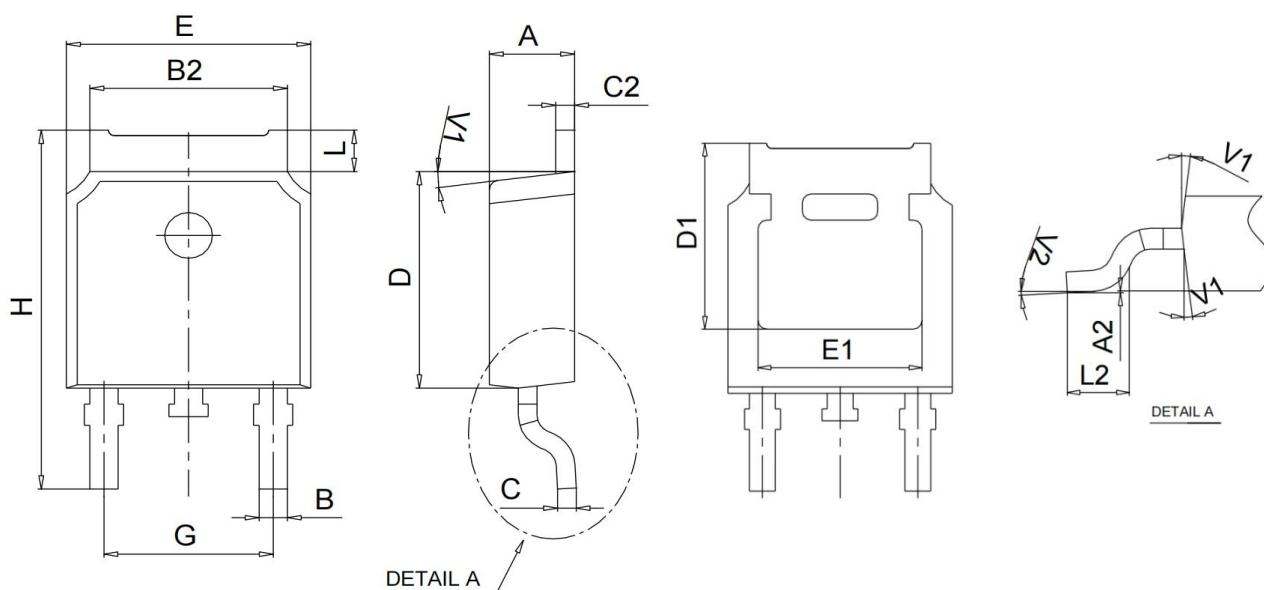


Figure 11. Transient thermal impedance

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°