

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	950mΩ@10V	10A

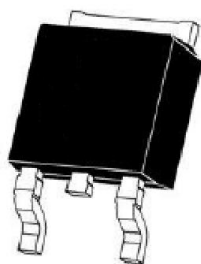
Feature

- Low on-resistance
- Low Gate Charge

Application

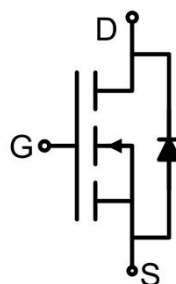
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)

Package

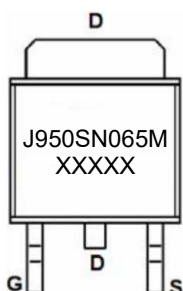


TO-252AB

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	10	A
Pulsed Drain Current ¹⁾	I _{DM}	30	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	125	mJ
Power Dissipation ³⁾	P _D	25.5	W
Thermal Resistance Junction to Case	R _{θJC}	4.9	°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	3.3	4.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.2A		860	950	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, f =1MHz		263		pF
Output Capacitance	C _{oss}			13.7		
Reverse Transfer Capacitance	C _{rss}			1.06		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =2A		7.72		nC
Gate-Source Charge	Q _{gs}			1.07		
Gate-Drain Charge	Q _{gd}			3.63		
Turn-on delay time	t _{d(on)}	V _{DS} =400V, V _{GS} =10V, I _D =2.2A R _G =4.7Ω		12.8		nS
Turn-on rise time	t _r			26.4		
Turn-off delay time	t _{d(off)}			22.2		
Turn-off fall time	t _f			75.6		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				10	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =3.2A			1.5	V
Reverse recovery time	T _{rr}	V _{DS} =400V, V _{GS} =0V, I _S =3.2A di/dt =100 A/μs		313		nS
Reverse recovery charge	Q _{rr}			0.92		μC

Notes:

- 1) The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2) The EAS data shows Max. rating . L=0.5mH, I_{AS} =2.3A, 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

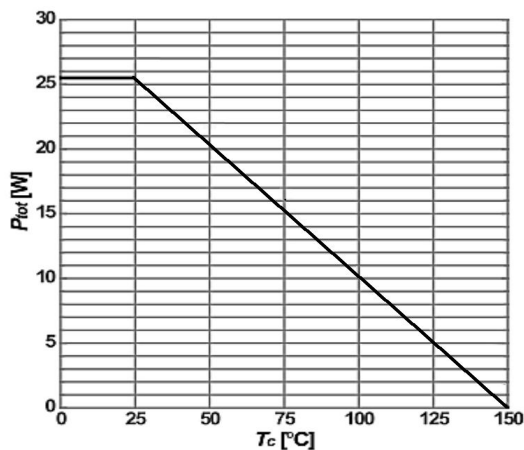


Figure1: Power dissipation

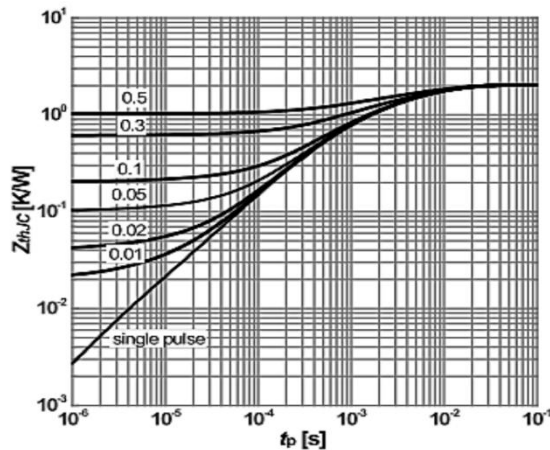


Figure2:Max. transient thermal impedance
 $Z_{thJC}=f(t_p)$; parameter: $D= t_p/T$

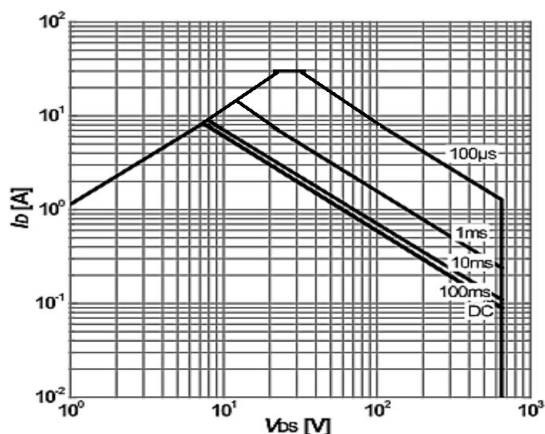


Figure3: Safe operating area

$I_D=f(V_{DS})$; $T_J=25^\circ\text{C}$; $D=0$; parameter: t_p

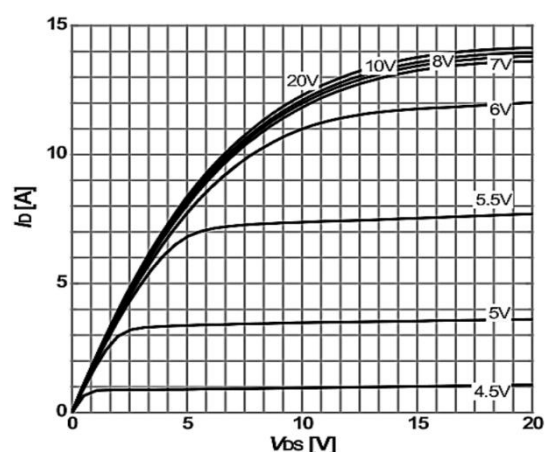


Figure4: Typ. output characteristics

$I_D=f(V_{DS})$; $T_J=25^\circ\text{C}$; parameter: V_{GS}

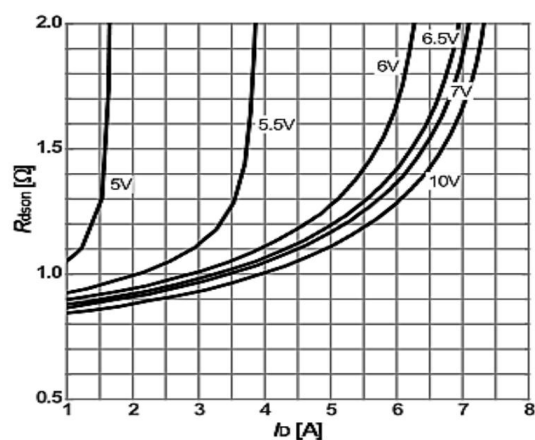


Figure5: Typ. drain-source on-state resistance

$R_{DS(on)}=f(I_D)$; $T_J=25^\circ\text{C}$; parameter: V_{GS}

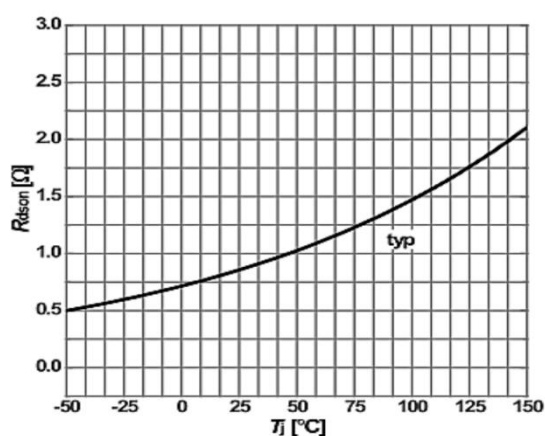


Figure 6: drain-source on-state resistance

$R_{DS(on)}=f(T_J)$; $I_D=3.2\text{A}$; $V_{GS}=10\text{V}$

Typical Characteristics

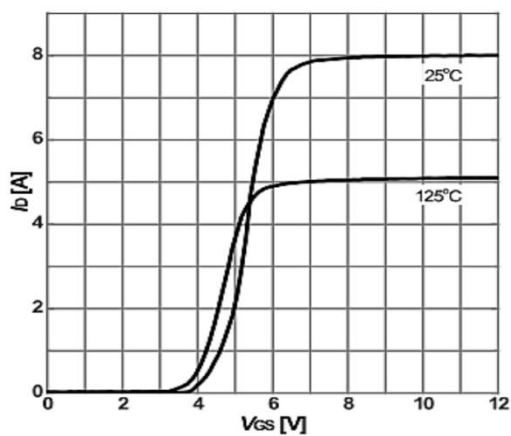


Figure 7 : Type. transfer characteristics

$I_D = f(V_{GS})$; $V_{DS} = 20V$; parameter: T_j

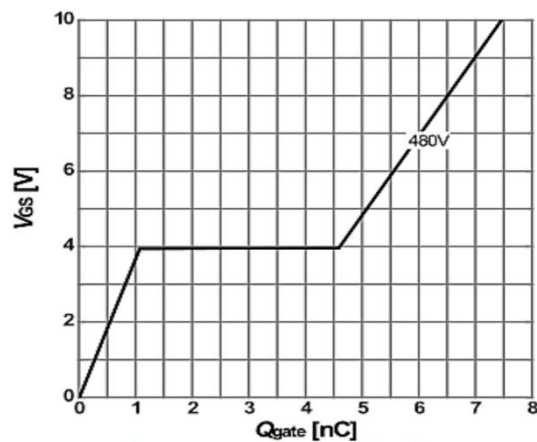
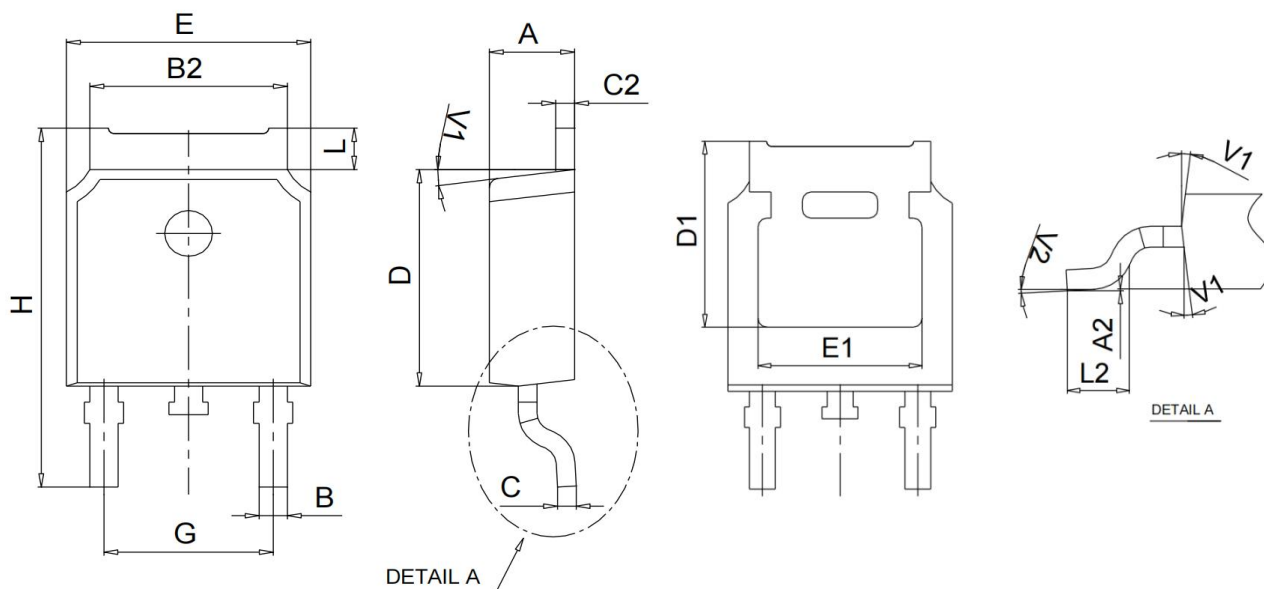


Figure 8 : Type. gate charge

$V_{GS} = f(Q_{gate})$; $I_D = 3.2A$ pulsed; $V_{DS} = 480V$

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°