

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
700V	290mΩ@10V	15A

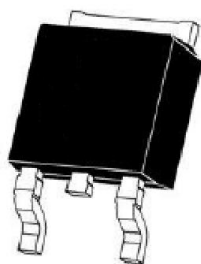
Feature

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

Application

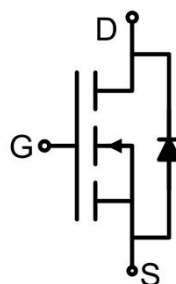
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)

Package

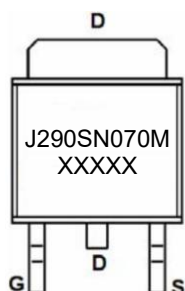


TO-252AB

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}	700	V
Gate-Source Voltage (V _{GS} =0V) AC (f > 1Hz)	V _{GS}	±30	V
Continuous Drain Current	I _D	15	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	10	A
Pulsed Drain Current ¹⁾	I _{DM}	60	A
Power Dissipation	P _D	131	W
Single pulse avalanche energy ²⁾	E _{AS}	304	mJ
Thermal Resistance Junction-to-Case	R _{θJC}	0.95	°C/W
Junction Temperature	T _J	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	700			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =700V,V _{GS} =0V,T _C =25℃			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3	3.5	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A		260	290	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f =1MHz		1210		pF
Output Capacitance	C _{oss}			74		
Reverse Transfer Capacitance	C _{rss}			0.2		
Total Gate Charge	Q _g	V _{DS} =480V,V _{GS} =10V, I _D =15A		24.7		nC
Gate-Source Charge	Q _{gs}			8.2		
Gate-Drain Charge	Q _{gd}			8.5		
Turn-on delay time	t _{d(on)}	V _{DD} =420V,V _{GS} =10V, I _D =8A, R _G =2.3Ω		15		nS
Turn-on rise time	t _r			10		
Turn-off delay time	t _{d(off)}			57		
Turn-off fall time	t _f			9		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25℃			15	A
Pulsed Source-drain current	I _{SM}				60	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =15A,T _J =25℃			1.2	V
Reverse recovery time	t _{rr}	I _F =7.5A,di/dt=100 A/μs, T _J =25℃		240		nS
Reverse recovery charge	Q _{rr}			2		μC
Peak Reverse Recovery Current	I _{rrm}			17		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2) T_J = 25°C, V_{DD} = 50V, V_{GS} = 10V, R_G = 25Ω.

3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Safe operating area

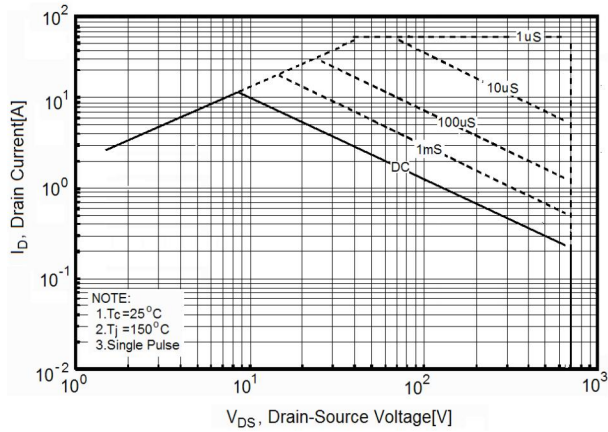


Figure2. Transient Thermal Impedance

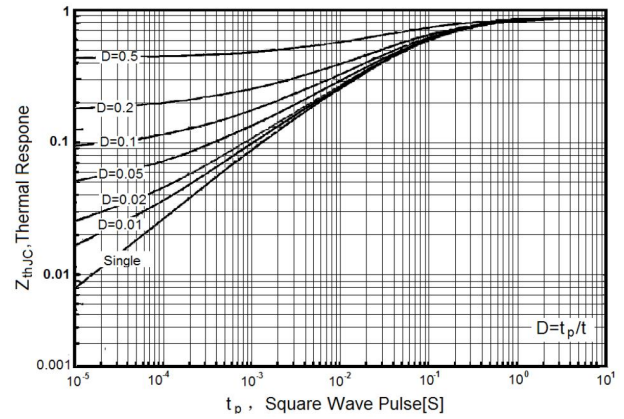


Figure3. Source-Drain Diode Forward Voltage

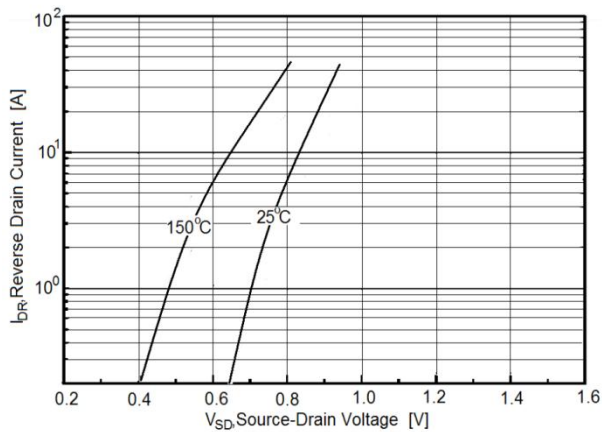


Figure4. Output characteristics

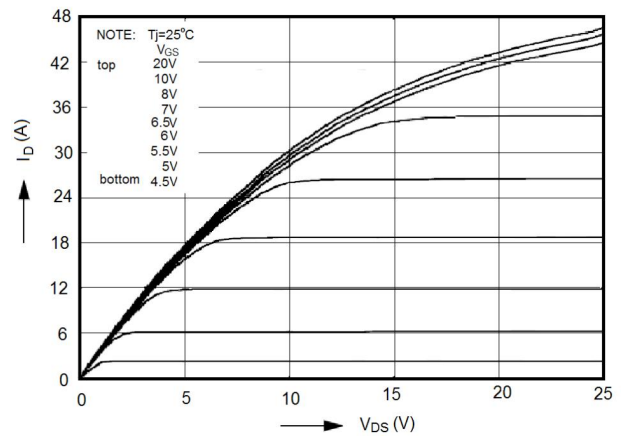


Figure5. Transfer characteristics

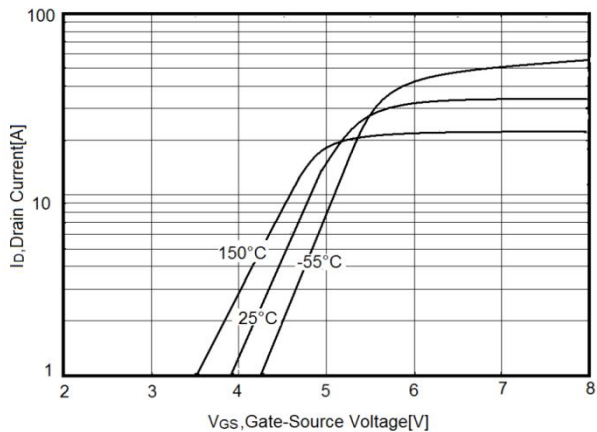
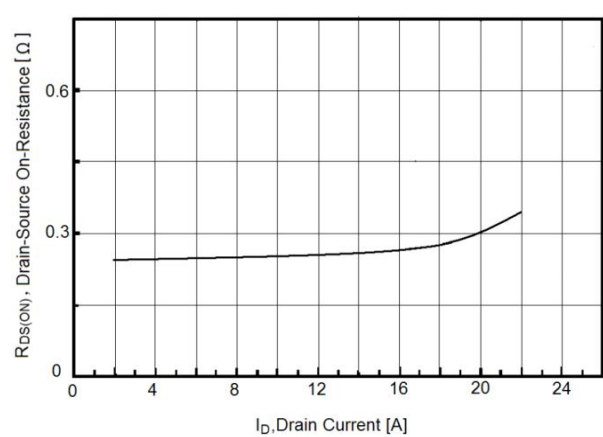


Figure6. Static drain-source on resistance



Typical Characteristics

Figure7. $R_{DS(ON)}$ vs Junction Temperature

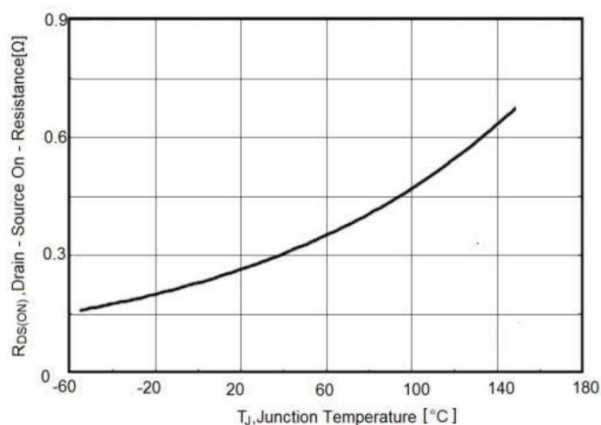


Figure8. BV_{DSS} vs Junction Temperature

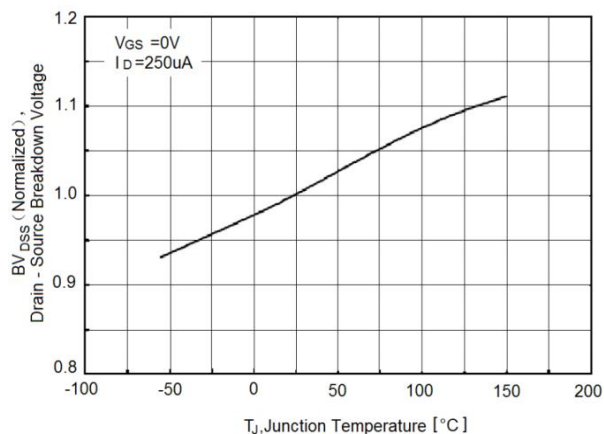


Figure9. Maximum I_D vs Junction Temperature

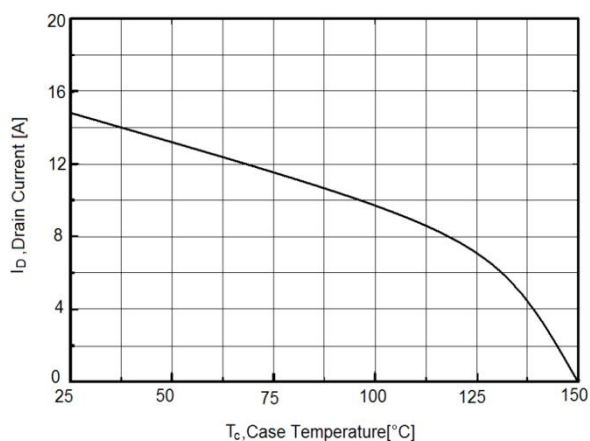


Figure10. Gate charge waveforms

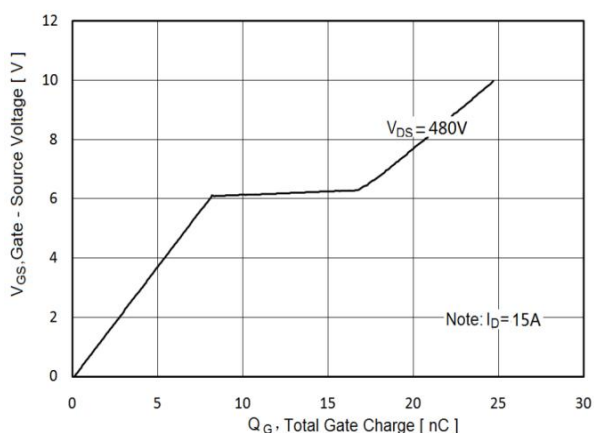
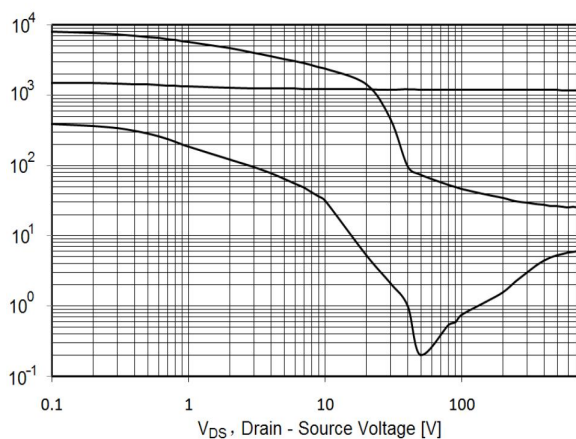
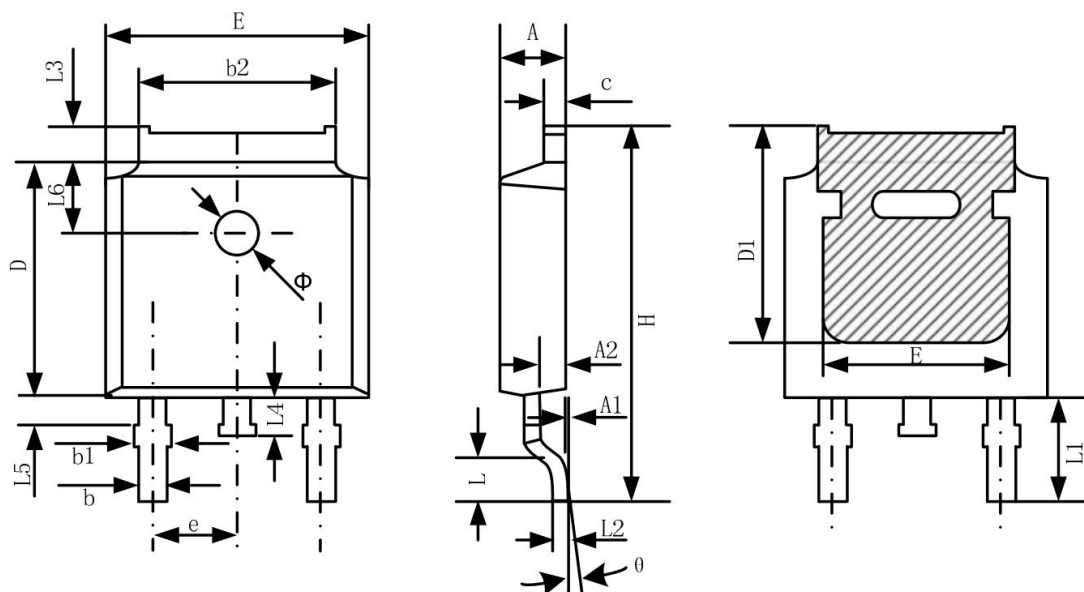


Figure11. Capacitance



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.043
b	0.720	0.850	0.028	0.033
b1	0.720	0.900	0.028	0.035
b2	5.130	5.460	0.202	0.215
c	0.470	0.600	0.019	0.024
D	6.000	6.200	0.236	0.244
D1	5.250	-	0.207	-
E	6.500	6.700	0.256	0.264
E1	4.700	-	0.185	-
e	2.190	2.390	0.086	0.094
H	9.800	10.400	0.386	0.409
L	1.400	1.700	0.055	0.067
L1	2.900 REF.		0.114 REF.	
L2	0.508 BSC.		0.020 BSC.	
L3	0.900	1.250	0.035	0.049
L4	0.600	1.000	0.024	0.039
L5	0.150	0.750	0.006	0.030
L6	1.800 REF.		0.071 REF.	
ϕ	1.200	1.400	0.047	0.055
θ	0°	8°	0°	8°