

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
500V	330mΩ@10V	10A

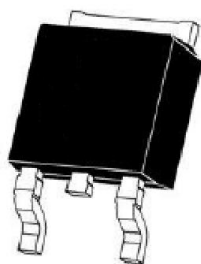
Feature

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

Application

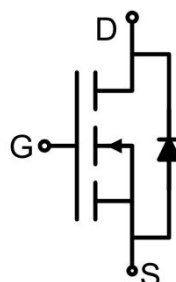
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)

Package

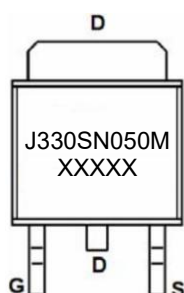


TO-252AB

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}	500	V
Gate-Source Voltage (V _{GS} =0V) AC (f > 1Hz)	V _{GS}	±30	V
Gate-Source Voltage (V _{GS} =0V) DC	V _{GS}	±20	V
Continuous Drain Current	I _D	10	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	7	A
Pulsed Drain Current ¹⁾	I _{DM}	30	A
Power Dissipation	P _D	93	W
Thermal Resistance Junction to Case	R _{θJC}	1.61	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°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	500			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =500V, V _{GS} =0V, T _C =25℃			10	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±200	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3		5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A		280	330	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		545		pF
Output Capacitance	C _{oss}			36		
Reverse Transfer Capacitance	C _{rss}			4		
Total Gate Charge	Q _g	V _{DS} =400V, V _{GS} =10V, I _D =5A		12.5		nC
Gate-Source Charge	Q _{gs}			5		
Gate-Drain Charge	Q _{gd}			3.5		
Turn-on delay time	t _{d(on)}	V _{DS} =380V, V _{GS} =10V, I _D =5A R _G =4Ω		9		nS
Turn-on rise time	t _r			12		
Turn-off delay time	t _{d(off)}			43		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25℃			10	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =10A, T _J =25℃			1.2	V
Reverse recovery time	T _{rr}	I _F =5A, di/dt =100 A/μs T _J =25℃		135		nS
Reverse recovery charge	Q _{rr}			0.37		μC
Peak Reverse Recovery Current	I _{rrm}			5.5		A

Notes:

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

2) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Output characteristics

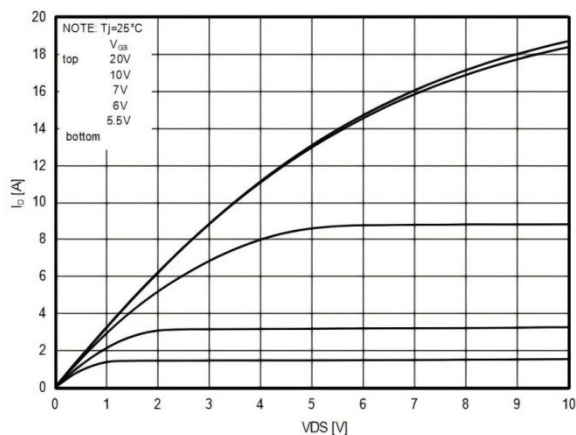


Figure2. Transfer characteristics

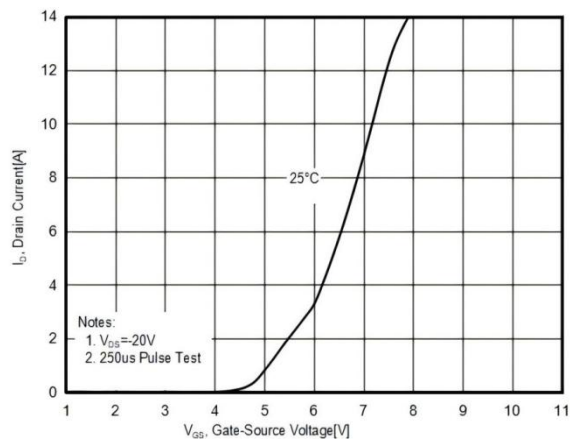


Figure3. $R_{DS(ON)}$ vs Junction Temperature

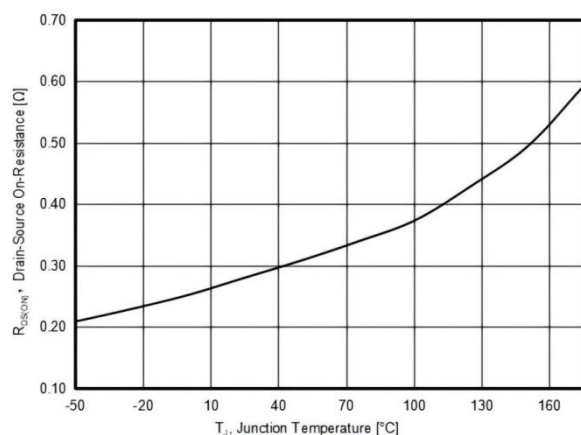


Figure4. BV_{DSS} vs Junction Temperature

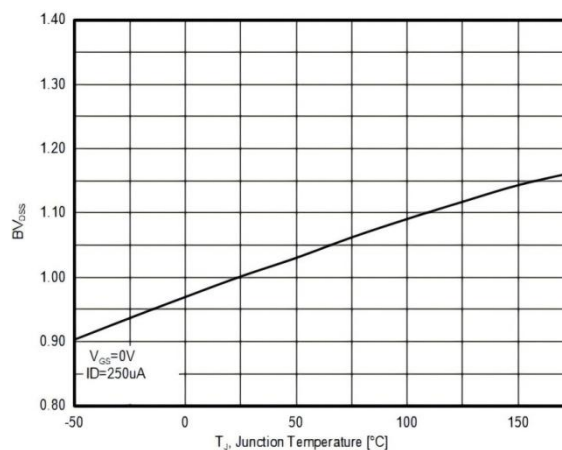


Figure5. Maximum I_D vs Junction Temperature

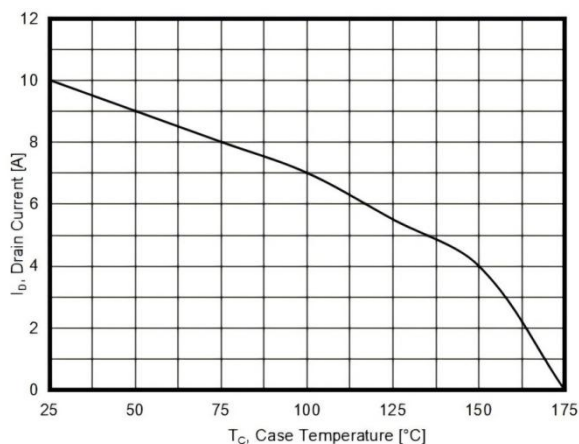
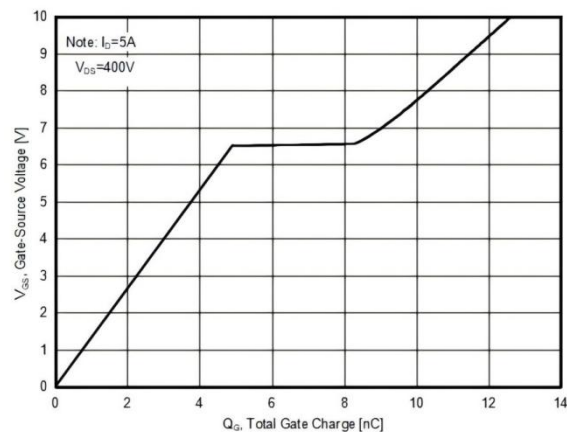


Figure6. Gate charge waveforms



Typical Characteristics

Figure7. Static drain-source on resistance

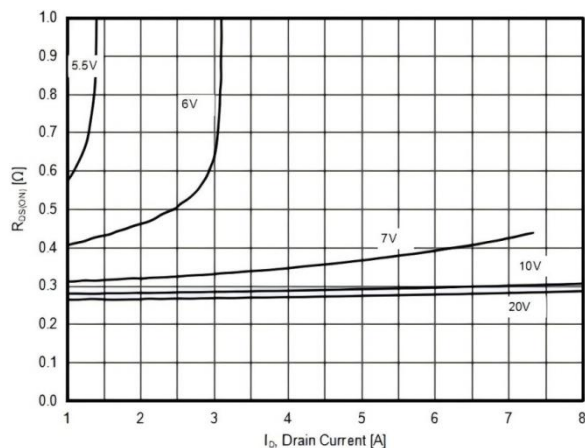


Figure8. Source-Drain Diode Forward Voltage

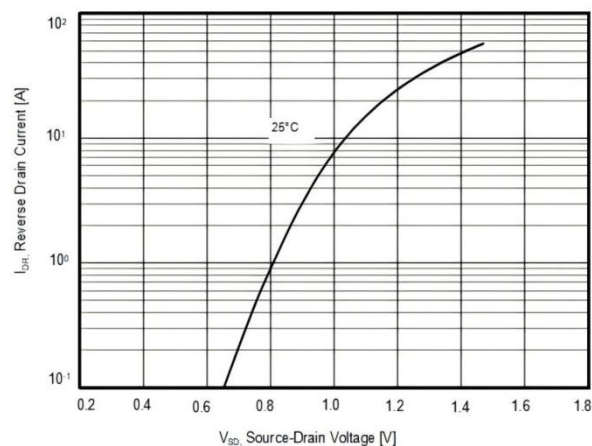


Figure9. Capacitance

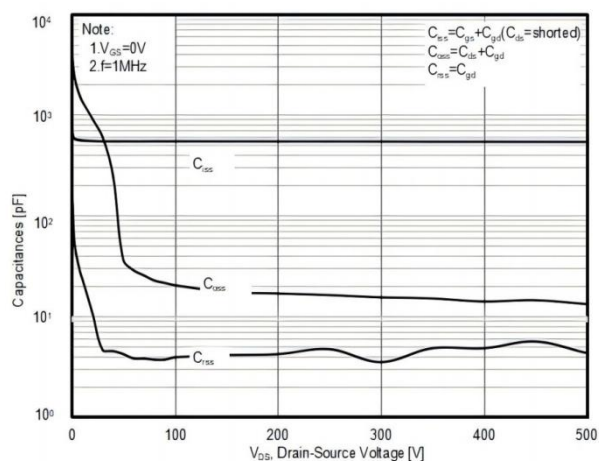
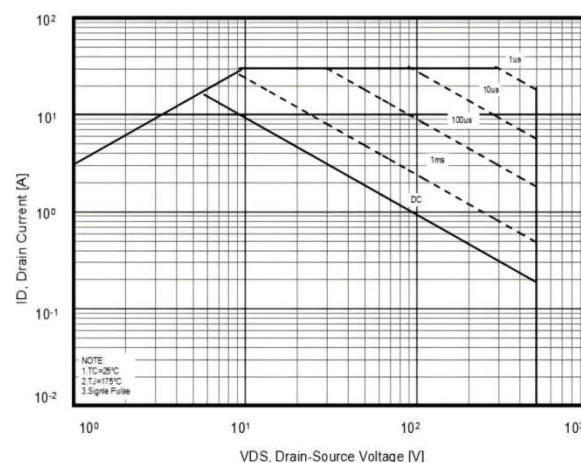
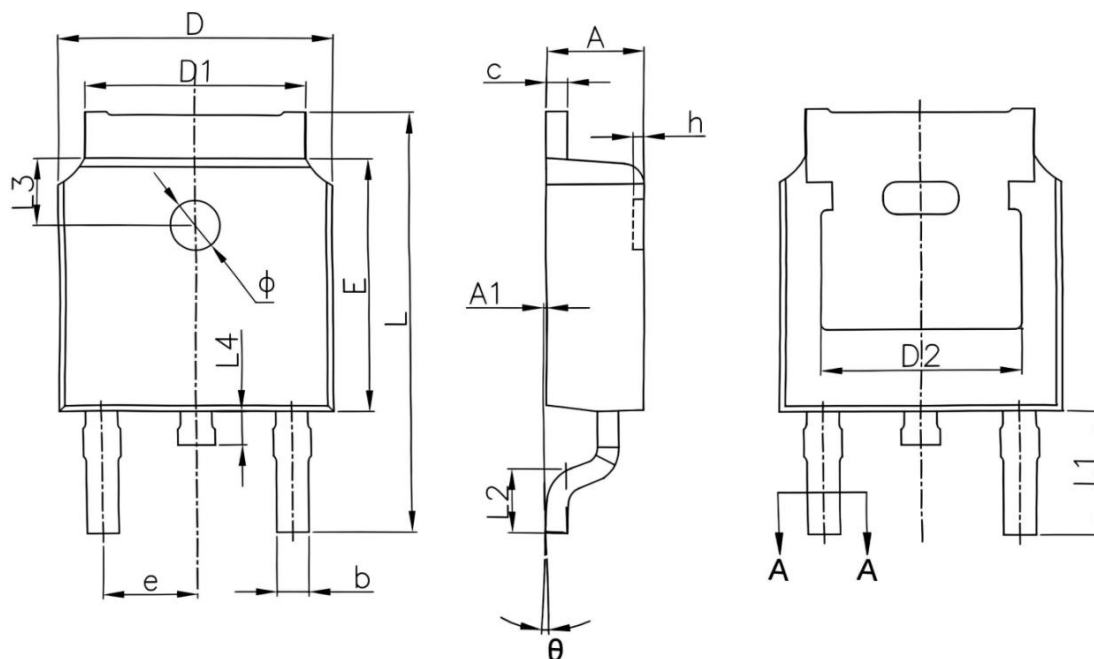


Figure10. Safe operating area



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.130	0.000	0.005
b	0.660	0.860	0.026	0.034
b1	0.730	0.790	0.029	0.031
c	0.460	0.580	0.018	0.023
c1	0.500	0.520	0.020	0.020
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.190	2.390	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.067	0.055
L3	1.600 BSC.		0.063 BSC.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
θ	0°	8°	0°	8°