



DESCRIPTION

AM2502 is available in a TO-220 package.

FEATURES

- 150V/108A,
 $R_{DS(ON)} = 10.5m\Omega(\text{max.}) @ V_{GS} = 10V$
- Reliable and Rugged
- Available in a TO-220 package.

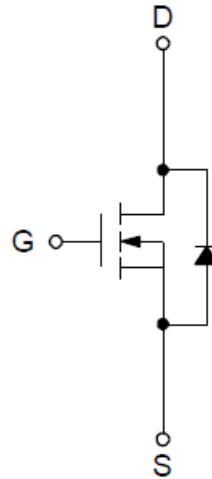
ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM2502T3U
		AM2502T3VU
Note	V: Halogen free Package U: Tube	
AiT provides all RoHS products		

APPLICATION

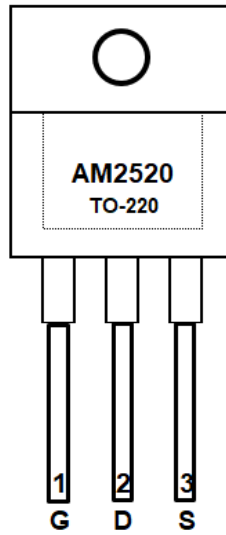
- Synchronous Rectification.
- Uninterruptible Power Supply.
- Motion Control Applications.

PIN DESCRIPTION





PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source



ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted

V _{DSS} , Drain-Source Voltage		150V
V _{GSS} , Gate-Source Voltage		±25V
T _J , Maximum Junction Temperature		150°C
T _{STG} , Storage Temperature Range		-55°C~+150°C
I _S , Diode Continuous Forward Current	T _C =25°C	54A
I _D , Continuous Drain Current	T _C =25°C	108A
I _{DM} , Pulsed Drain Current	T _C =25°C	300A ^{NOTE1}
P _D , Maximum Power Dissipation	T _C =25°C	312W
	T _C =100°C	125W
R _{θJC} , Thermal Resistance-Junction to Case	Steady State	0.4°C/W
I _D , Continuous Drain Current	T _A =25°C	8.7A
	T _A =70°C	7.0A
P _D , Maximum Power Dissipation	T _A =25°C	2W
	T _A =70°C	1.28W
R _{θJA} , Thermal Resistance-Junction to Ambient	Steady State	62.5°C/W
I _{AS} ^{NOTE2} , Avalanche Current, Single pulse	L=0.5mH	32A
E _{AS} ^{NOTE2} , Avalanche Energy, Single pulse	L=0.5mH	256mJ

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: Pulse width limited by max. junction temperature.

NOTE2: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J =25°C)



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	150	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =120V, V _{GS} =0V T _J =85°C	-	-	1	μA
			-	-	30	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3	4	5	V
Gate Leakage Current	I _{GSS}	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
Drain-Source On-state Resistance	R _{DS(ON)} NOTE3	V _{GS} =10V, I _{DS} =40A	-	8.7	10.5	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} NOTE3	I _{SD} =20A, V _{GS} =0V	-	0.8	1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =40A, di _{SD} /dt=100A/μs	-	90	-	ns
Reverse Recovery Charge	Q _{rr}		-	410	-	nC
Dynamic Characteristics NOTE4						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	1.0	-	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	6800	8840	pF
Output Capacitance	C _{oss}		-	670	-	
Reverse Transfer Capacitance	C _{rss}		-	145	-	
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, R _L =30Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	43	78	ns
Turn-on Rise Time	t _r		-	17	31	
Turn-off Delay Time	t _{d(off)}		-	84	152	
Turn-off Fall Time	t _f		-	62	112	
Gate Charge Characteristics NOTE4						
Total Gate Charge	Q _g	V _{DS} =75V, V _{GS} =10V, I _D =40A	-	118	166	nC
Gate-Source Charge	Q _{gs}		-	51	-	
Gate-Drain Charge	Q _{gd}		-	28	-	

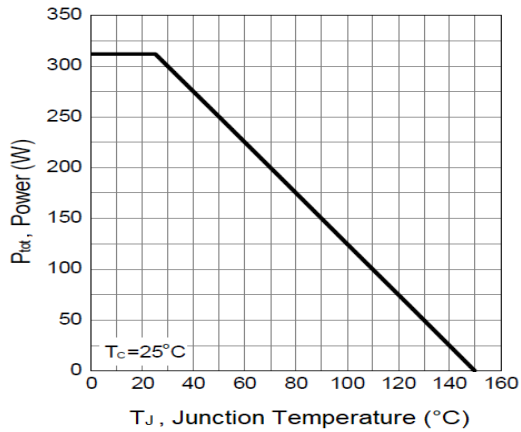
NOTE3: Pulse test; pulse width≤300μs, duty cycle≤2%.

NOTE4: Guaranteed by design, not subject to production testing.

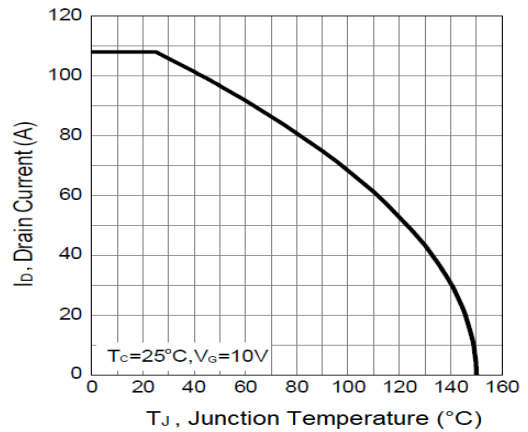


TYPICAL CHARACTERISTICS

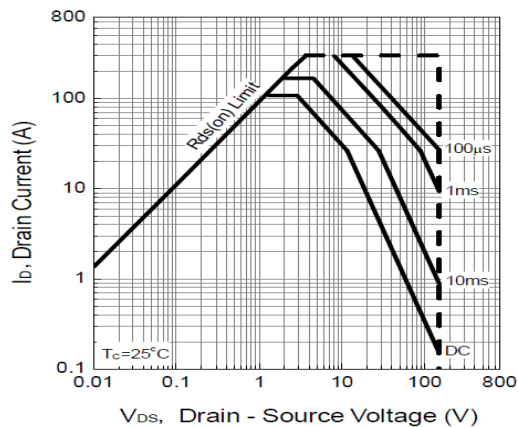
1. Power Dissipation



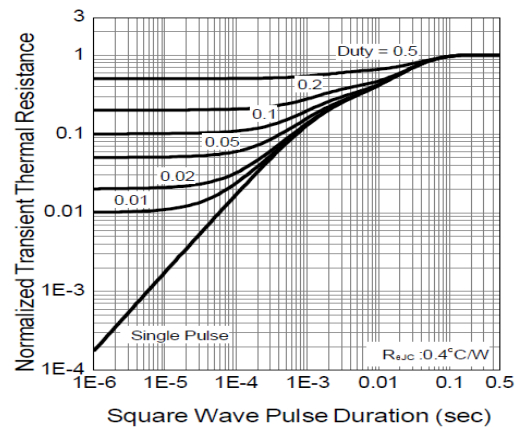
2. Drain Current



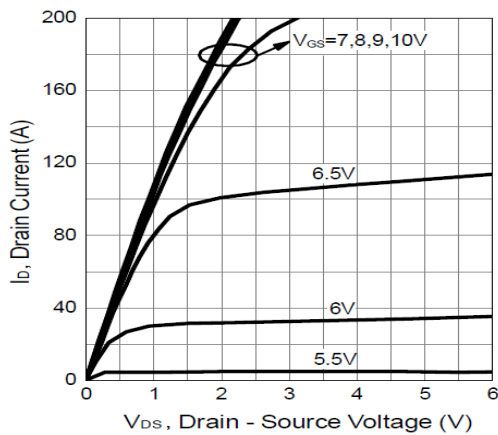
3. Safe Operation Area



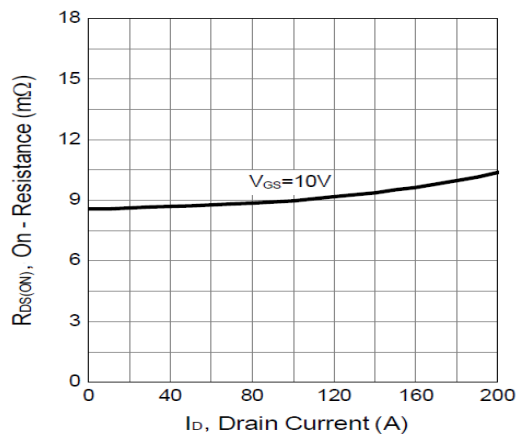
4. Thermal Transient Impedance



5. Output Characteristics

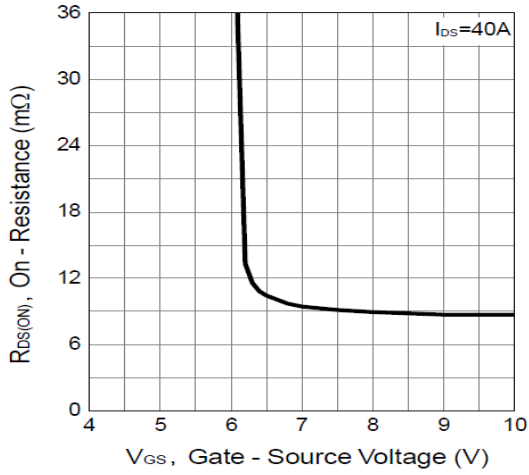


6. Drain-Source On Resistance

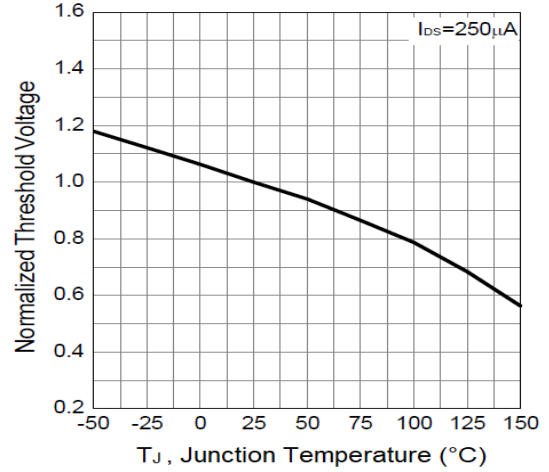




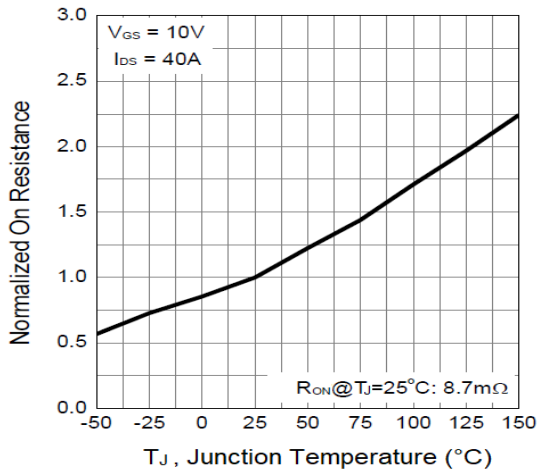
7. Gate-Source On Resistance



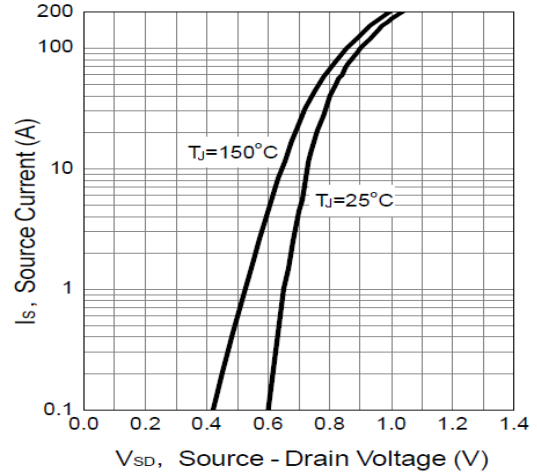
8. Gate Threshold Voltage



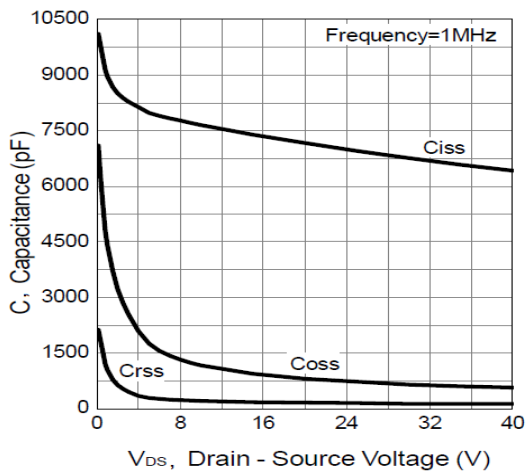
9. Drain-Source On Resistance



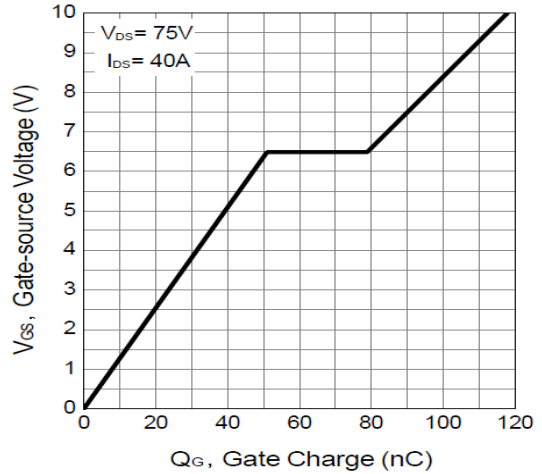
10. Source-Drain Diode Forward



11. Capacitance

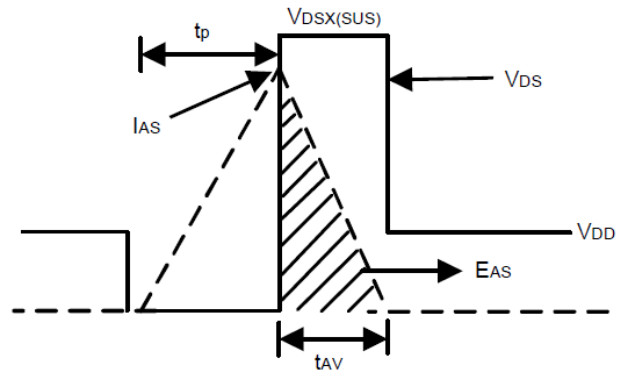
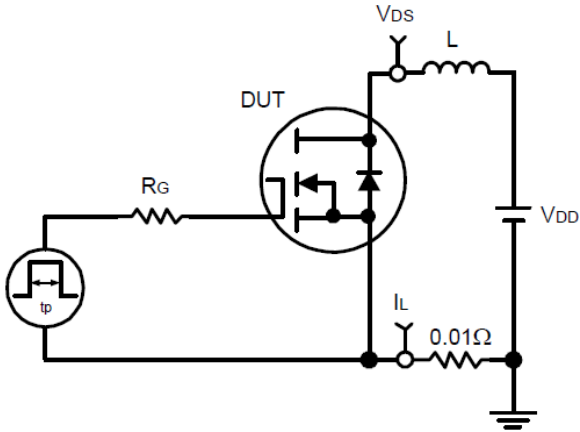


12. Gate Charge

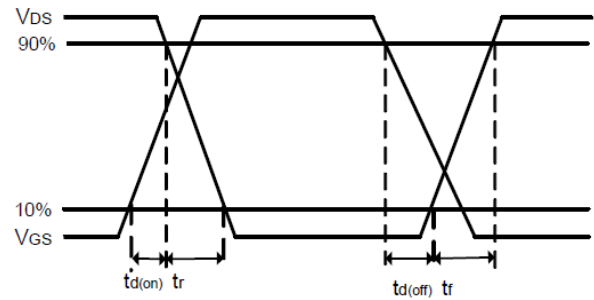
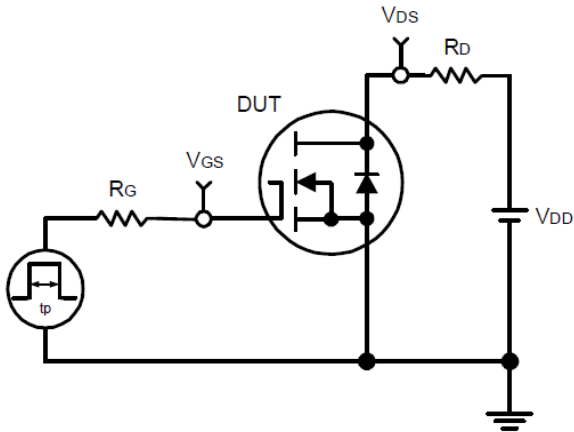




Avalanche Test Circuit and Waveforms



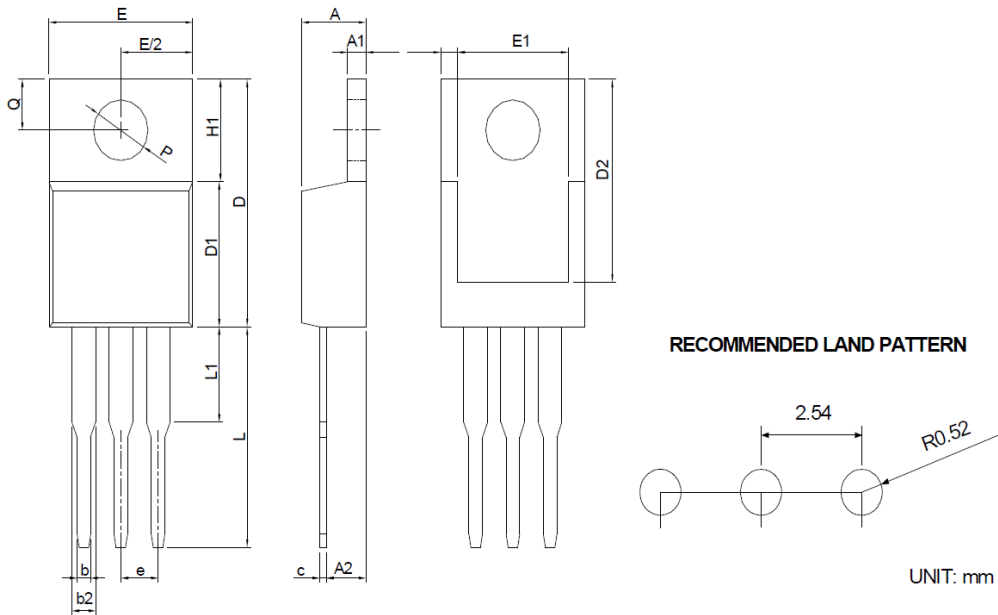
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in TO-220 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.14	1.78	0.045	0.070
c	0.36	0.61	0.014	0.024
D	14.22	16.51	0.560	0.650
D1	8.38	9.02	0.330	0.355
D2	12.19	13.65	0.480	0.537
E	9.65	10.67	0.380	0.420
E1	6.86	8.89	0.270	0.350
e	2.54 BSC		0.100 BSC	
H1	5.84	6.86	0.230	0.270
L	12.70	14.73	0.500	0.580
L1	-	6.35	-	0.250
P	3.53	4.09	0.139	0.161
Q	2.54	3.43	0.100	0.135



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