DESCRIPTION

V_{DS}= 100V

V_{GS}= ±20V

ID(A)= 120A

$R_{DS(ON)}$= 4.8mΩ (max.) @ V_{GS}=10V

AM0292 is available in TO-220 package.

FEATURES

- 100% UIS + R_g Tested
- Reliable and Rugged
- Available in TO-220 package.

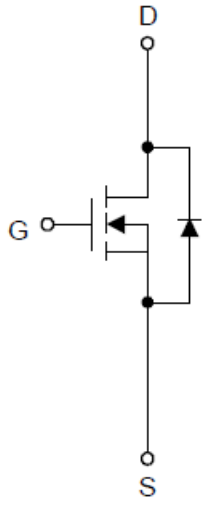
ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM0292T3U
		AM0292T3VU
Note	V: Halogen free Package U: Tube	
AiT provides all RoHS products		

APPLICATION

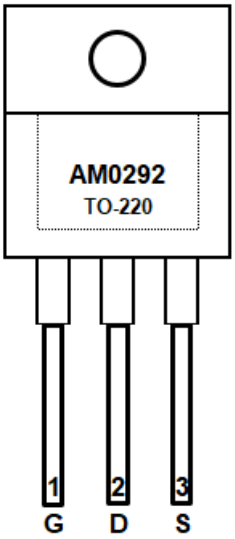
- High Efficiency Synchronous Rectification in SMPS.
- Uninterruptible Power Supply.
- Hard Switched and High Frequency Circuits.

N CHANNEL MOSFET



N-Channel MOSFET

PIN DESCRIPTION



Top View

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted

V_{DSS}, Drain-Source Voltage		100V
V_{GSS}, Gate-Source Voltage		±20V
T_J, Maximum Junction Temperature		150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
I_S, Diode Continuous Forward Current	T_C=25°C	70A
I_D, Continuous Drain Current	T_C=25°C	120A[NOTE1]
	T_C=100°C	86A
I_{DM}[NOTE2], Pulsed Drain Current	T_C=25°C	400A
P_D, Maximum Power Dissipation	T_C=25°C	192W
	T_C=100°C	76W
$R_{\theta JC}$, Thermal Resistance-Junction to Case		0.65℃/W
I_D, Continuous Drain Current	T_A=25°C	14.0A
	T_A=70°C	11.2A
P_D, Maximum Power Dissipation	T_A=25°C	2.0W
	T_A=70°C	1.28W
$R_{\theta JA}$, Thermal Resistance-Junction to Ambient		62.5℃/W
I_{AS}[NOTE3],Avalanche Current, Single pulse	L=0.5mH	42A
E_{AS}[NOTE3], Avalanche Energy, Single pulse	L=0.5mH	441mJ

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: Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 120A

NOTE2: Pulse width limited by maximum junction temperature.

NOTE3: UIS tested and pulse width limited by maximum junction temperature 150℃ (initial temperature T_J=25℃).

ELECTRICAL CHARACTERISTICS

T_A = 25℃, unless otherwise noted

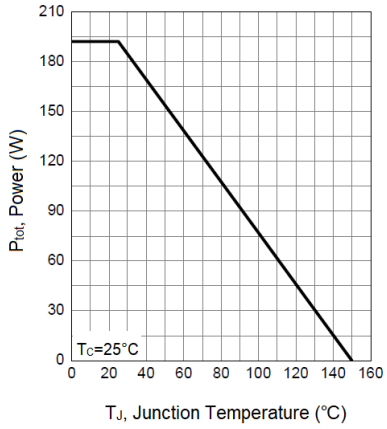
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V	-	-	1	μA
		T_J =85°C	-	-	30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	2	3	4	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE4	V_{GS}=10V,I_{DS}=40A	-	4.0	4.8	mΩ
Diode Characteristics						
Diode Forward Voltage	V_{SD} NOTE4	I_{SD}=40A, V_{GS}=0V	-	0.8	1.3	V
Reverse Recovery Time	t_{rr}	I_{SD}=40A, dI_{SD}/dt=100A/μs	-	65	-	ns
Reverse Recovery Charge	Q_{rr}		-	135	-	nC
Dynamic CharacteristicsNOTE5						
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	20	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	4450	5790	pF
Output Capacitance	C_{oss}		-	1420	-	
Reverse Transfer Capacitance	C_{rss}		-	50	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	20	36	ns
Turn-on Rise Time	t_r		-	16	29	
Turn-off Delay Time	$t_{d(off)}$		-	74	134	
Turn-off Fall Time	t_f		-	118	213	
Gate Charge CharacteristicsNOTE5						
Total Gate Charge	Q_g	V_{DS}=50V, V_{GS}=10V, I_{DS}=40A	-	77	108	nC
Gate-Source Charge	Q_{gs}		-	20	-	
Gate-Drain Charge	Q_{gd}		-	18	-	

NOTE4: Pulse test; pulse width≤300μs, duty cycle≤2%.

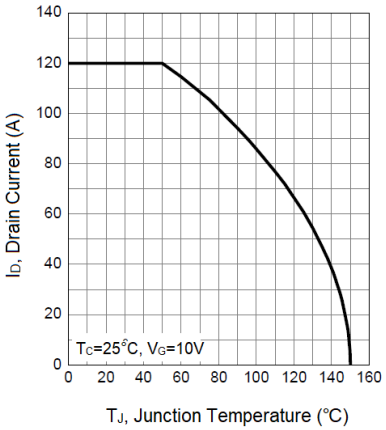
NOTE5: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

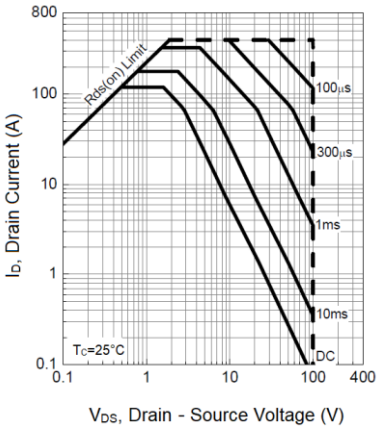
1. Power Dissipation



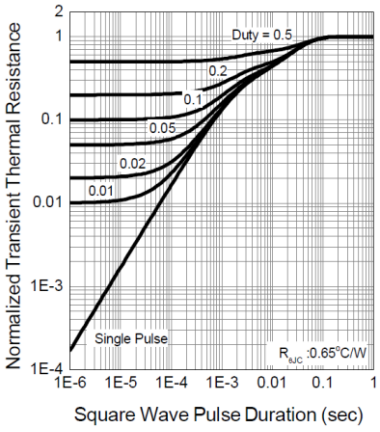
2. Drain Current



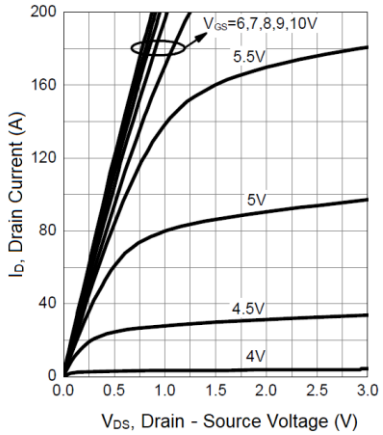
3. Safe Operation Area



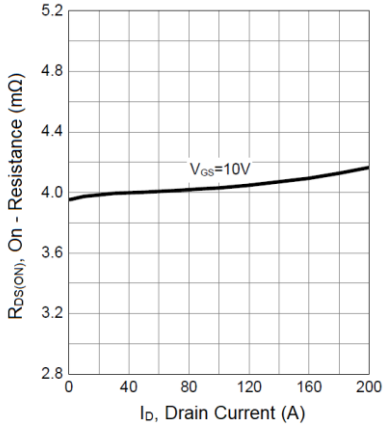
4. Thermal Transient Impedance



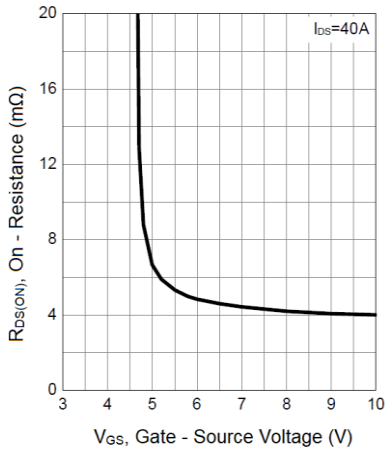
5. Output Characteristics



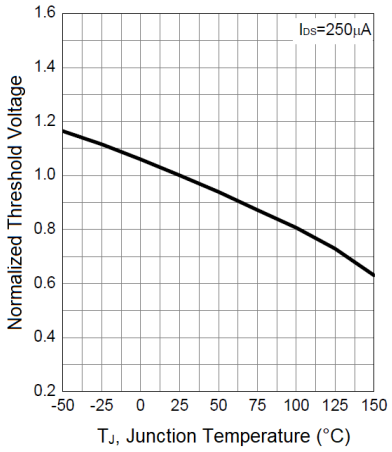
6. Drain-Source On Resistance



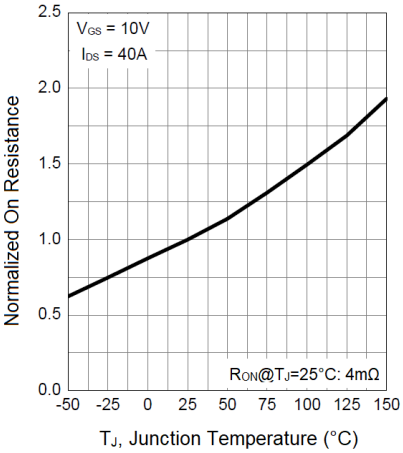
7. Gate-Source On Resistance



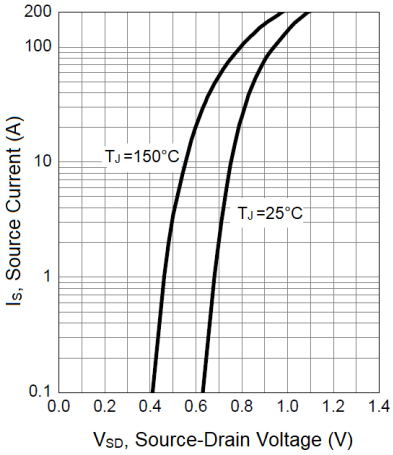
8. Gate Threshold Voltage



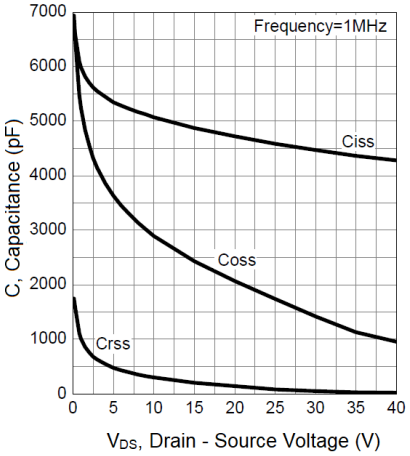
9. Drain-Source On Resistance



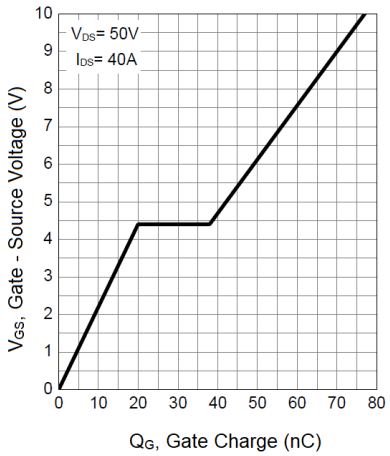
10. Source-Drain Diode Forward



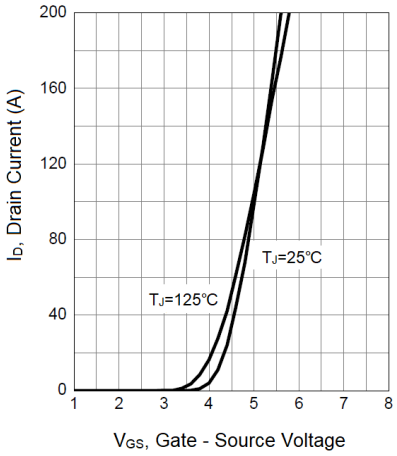
11. Capacitance



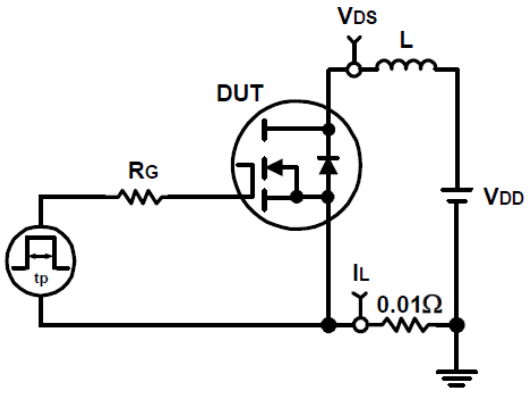
12. Gate Charge

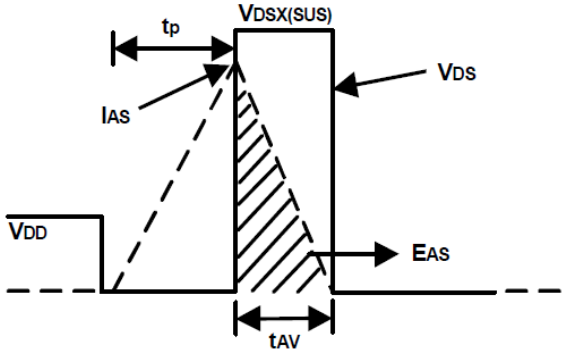


13. Transfer Characteristics

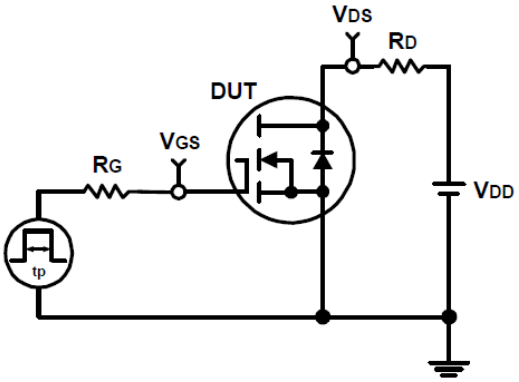


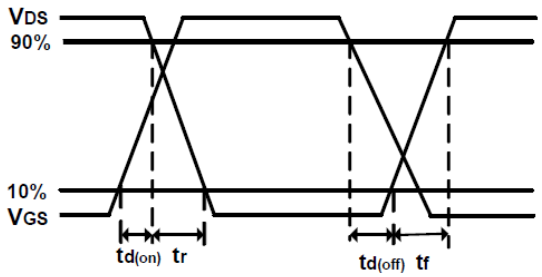
Avalanche Test Circuit and Waveforms





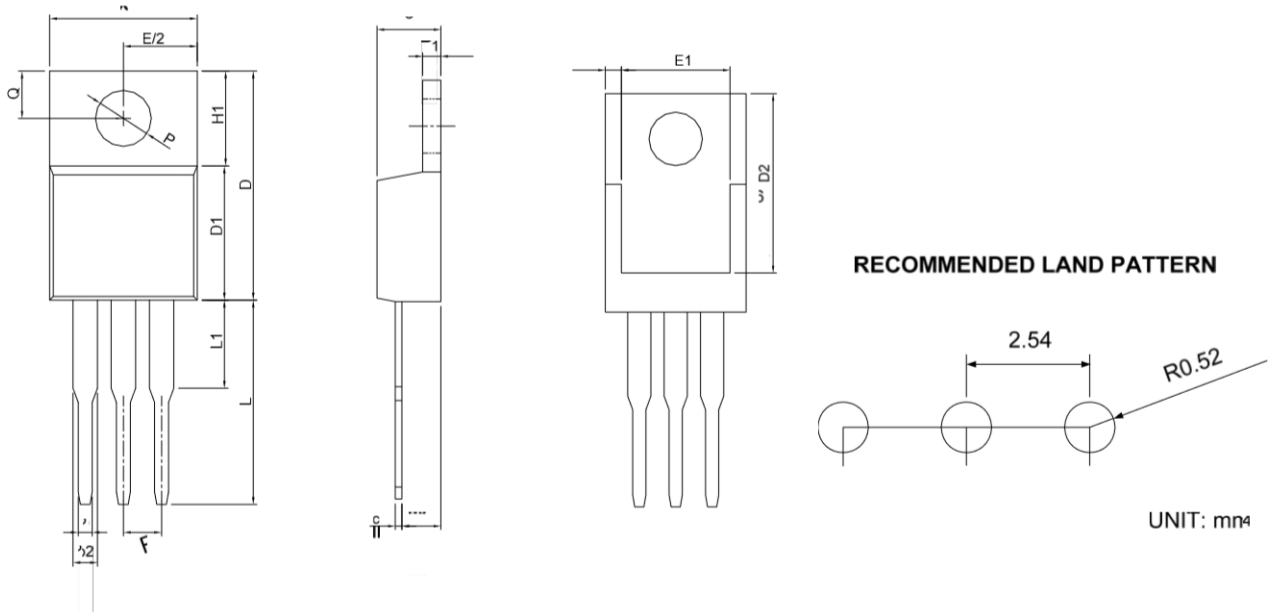
Switching Time Test Circuit and Waveforms





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	9.30	0.330	0.366
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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