

**DESCRIPTION**

The AM65R110T3VU is available in TO-220 Package.

V _{DSS}	R _{DS(ON)}	I _D
650V	110mΩ	26A

APPLICATIONS

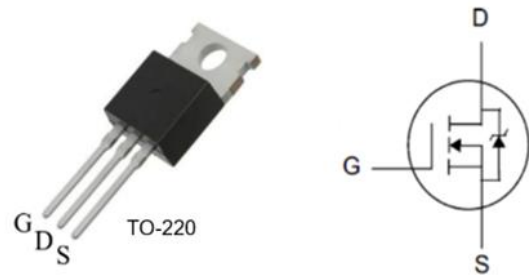
- LLC Half- Bridge
- Switching PWM Application
- UPS, Power Management
- Power factor correction

ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM65R110T3VU
Note	R: Tape & Reel V: Halogen free Package U:Tube	
AiT provides all RoHS products		

FEATURE

- 650V, 26A
- R_{DS(ON)} Typ. = 110mΩ @ V_{GS} = 10V
- Fast Recovery Body Diode
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!

PIN DESCRIPTION

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

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

V _{DS} , Drain-to-Source Voltage	650V
V _{GS} , Gate Source Voltage	±30V
I _D , Continuous Drain Current	26A
I _{DM} , Pulsed Drain Current ⁽¹⁾	92A
E _{AS} , Avalanche Energy, Single Pulse ⁽²⁾	850mJ
P _D , Power Dissipation	T _C = 25°C 312W
R _{θJC} , Thermal Resistance, Junction-to-Case	0.4°C/W
R _{θJA} , Thermal Resistance, Junction-to-Ambient	62°C/W
T _{STG} , Storage Temperature Range	-55°C ~ +150°C
T _J , Junction Temperature Range	-55°C ~ +150°C

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25Ω, L=10mH,

**ELECTRICAL CHARACTERISTICS**T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off 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	-	-	2.0	μA
	I _{DSS}	V _{DS} =520V, V _{GS} =0V T _J = 125°C	-	-	100	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±30V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	2.5	-	4.5	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 12A	-	110	130	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, f=1.0MHZ	-	2244	-	pF
Output Capacitance	C _{oss}		-	137	-	
Reverse Transfer Capacitance	C _{rss}		-	1.17	-	
Total Gate Charge	Q _g	V _{DD} = 325V , I _D =14A V _{GS} =0V ~10V	-	47	-	nC
Gate-Source Charge	Q _{gs}		-	11.5	-	
Gate-Drain Charge	Q _{gd}		-	18	-	
Switching Characteristic						
Turn-On Delay Time	t _{d(on)}	V _{DD} =325V, I _D = 14A R _{GEN} =2.35Ω, V _{GS} = 10V	-	37	-	ns
Turn-On Rise Time	t _r		-	35	-	
Turn-Off Delay Time	t _{d(off)}		-	88	-	
Turn-Off Fall Time	t _f		-	27	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _{SD}		-	-	26	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}		-	-	92	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S = 24A	-	-	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 14A,	-	170	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	488	-	nC

Notes:

* Pulse Test: Pulse Width≤380μs, Duty Cycle≤2%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. On-Region Characteristics

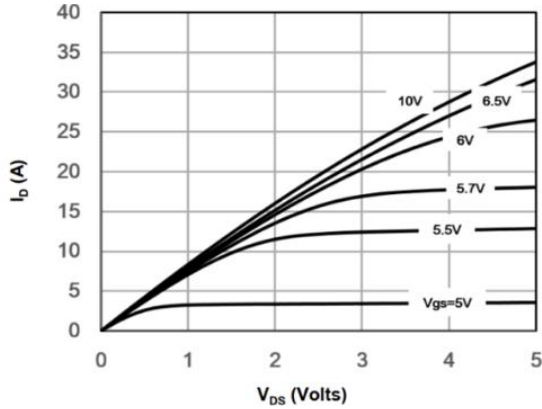


Fig 2. Transfer Characteristics

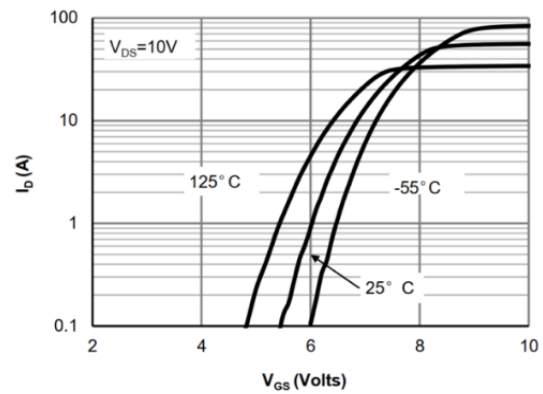


Fig 3. On-resistance vs. Drain Current and Gate voltage

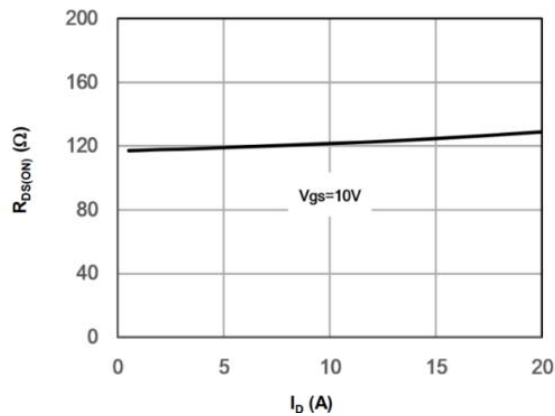


Fig 4. On-resistance vs. Junction Temperature

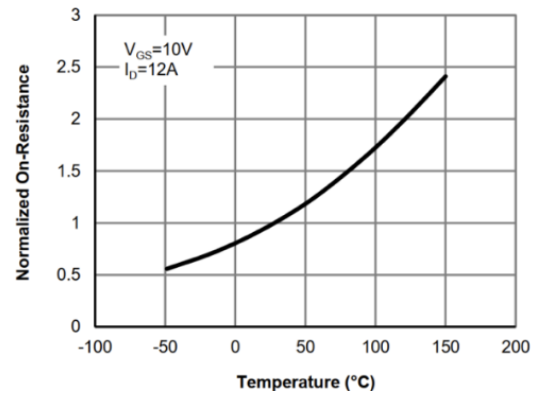


Fig 5. Break Down vs. Junction Temperature

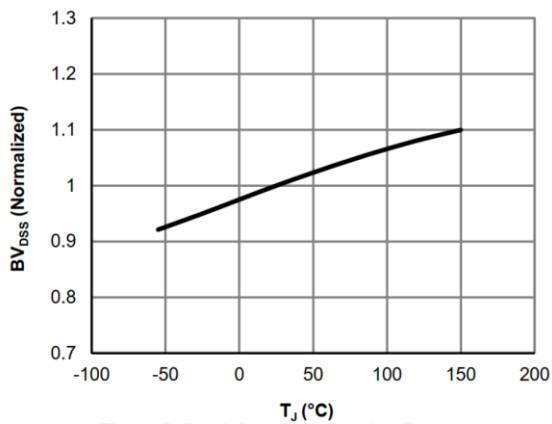


Fig 6. Body-Diode Characteristics

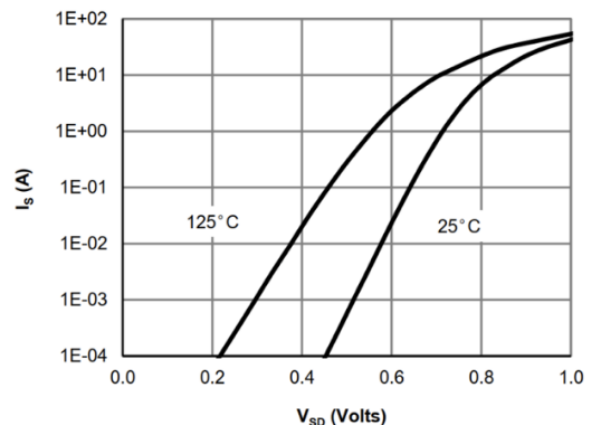




Fig 7. Gate-Charge Characteristics

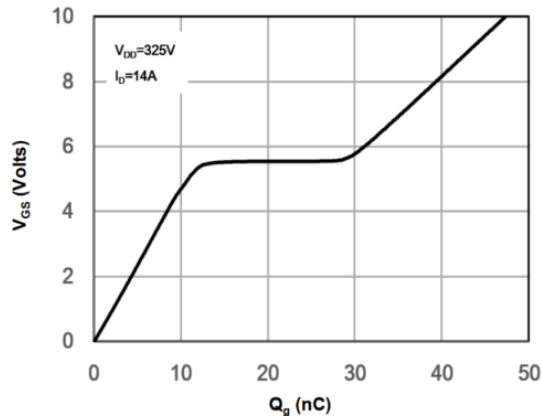


Fig 8. Capacitance Characteristics

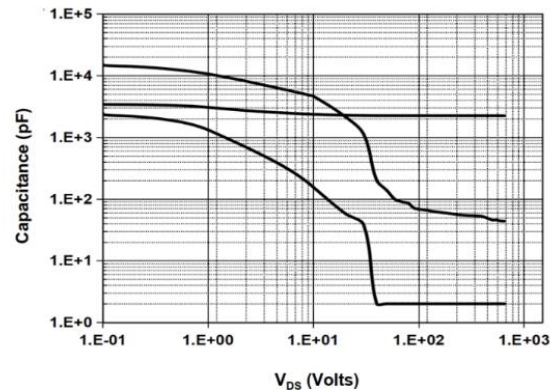
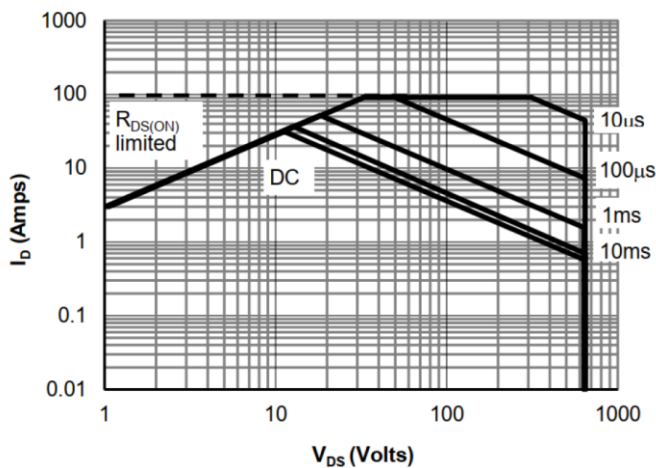


Fig 9. Maximum Forward Biased Safe Operating Area



TEST CIRCUIT AND WAVEFORM

Fig 10. Peak Diode Recovery dv/dt Waveforms

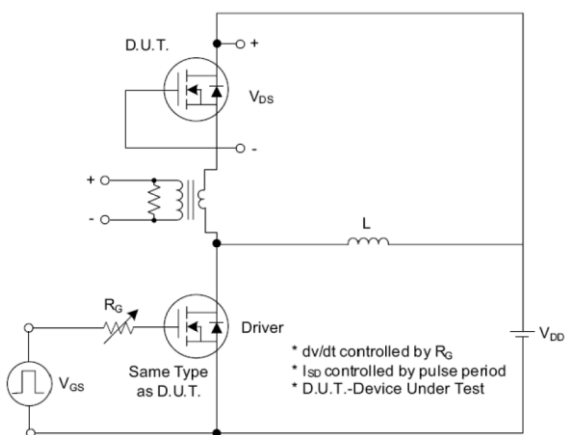


Fig 11. Peak Diode Recovery dv/dt Waveforms

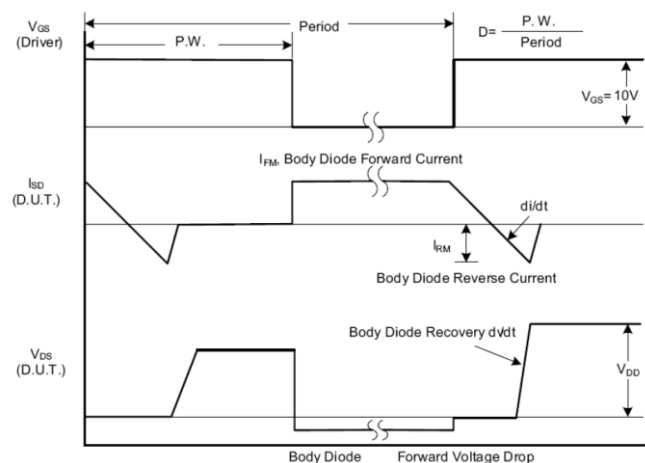




Fig 12. Switch Test Circuit

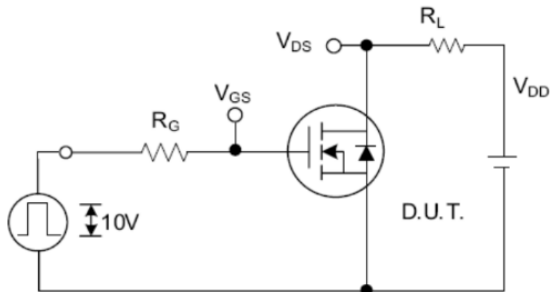


Fig 13. Switching WaveForms

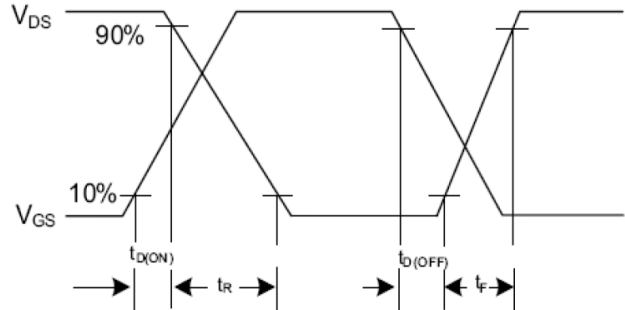


Fig 14. Gate Charge Circuit

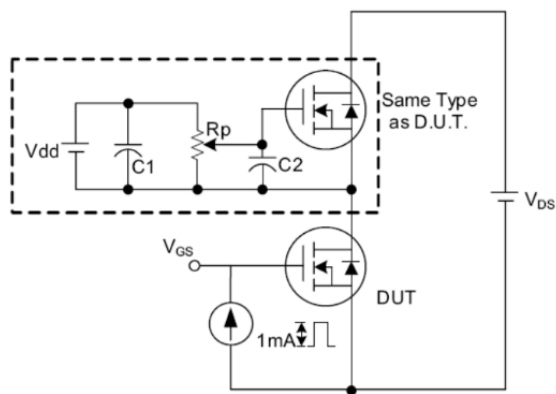


Fig 15. Gate Charge WaveForms

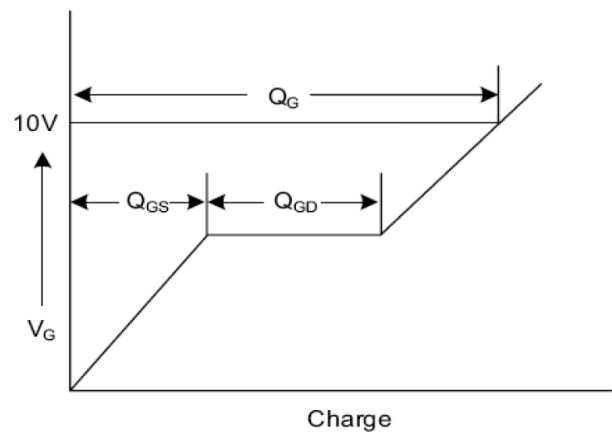


Fig 16. Unclamped Inductive Test Circuit

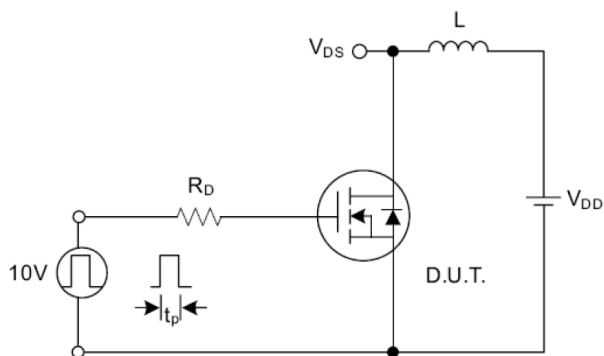
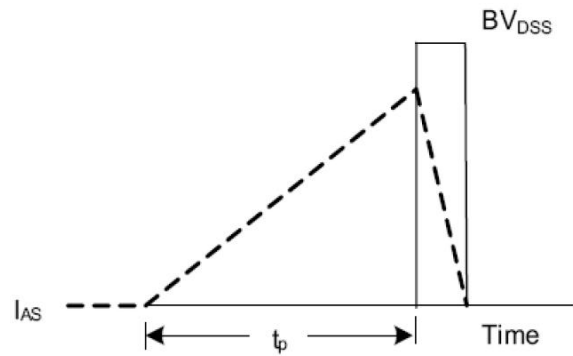
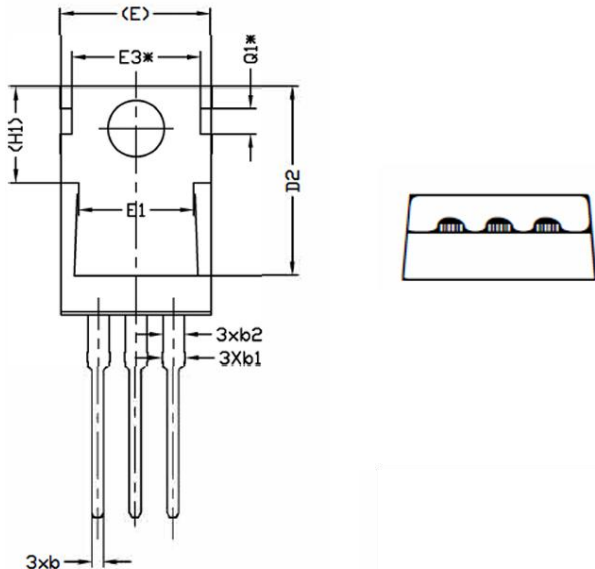
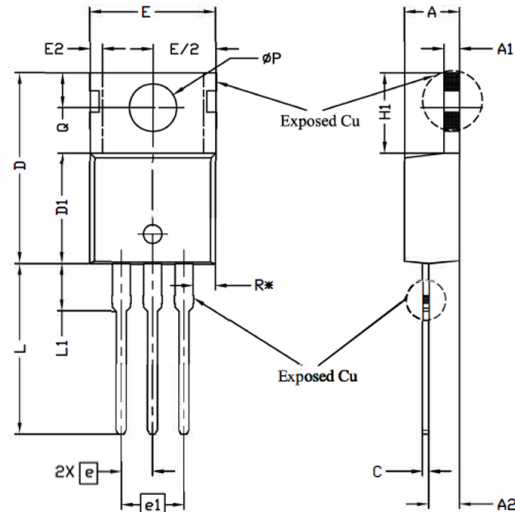


Fig 17. Unclamped Inductive Switching WaveForms



**PACKAGE INFORMATION**

Dimension in TO-220(Unit: mm)



Symbol	Millimeter	
	Min.	Max.
A	4.240	4.640
A1	1.150	1.400
A2	2.300	2.700
b	0.700	0.900
b1	1.200	1.750
b2	1.200	1.700
c	0.400	0.600
D	14.700	16.000
D1	8.820	9.020
D2	12.430	12.830
e	2.540 BSC.	
e1	5.080 BSC.	
E	9.960	10.360
E1	6.860	8.890
E2	-	0.760
E3	8.700 REF.	
H1	6.300	6.600
L	13.470	13.970
L1	3.600	4.000
Q	2.600	3.000
Q1	1.730 REF.	
φP	3.750	3.930
R	1.820 REF.	

**IMPORTANT NOTICE**

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc. integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.