



DESCRIPTION

The AM65R041 is available in TO-247 package.

BVDSS	RDSON	ID
700V	0.035Ω	75A

Application:

High Frequency Switching Mode Power Supply

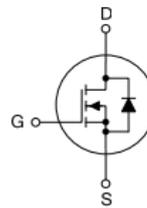
ORDERING INFORMATION

Package Type	Part Number	
TO-247 SPQ: 30pcs/Tube	TL3F	AM65R041TL3FU
		AM65R041TL3FVU
Note	U: Tube V: Halogen free Package	
AiT provides all RoHS products		

FEATURE

- Fast Switching
- 100% avalanche tested
- Improved dv/dt capability

PIN DESCRIPTION



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

**ABSOLUTE MAXIMUM RATINGS**

$T_C = 25^\circ\text{C}$, unless otherwise specified.

V_{DSS} , Drain-to-Source Voltage	650V
I_D , Continuous Drain Current	75A
I_D , Continuous Drain Current $T_C = 100^\circ\text{C}$	48A
I_{DM} , Pulsed Drain Current ⁽¹⁾	300A
V_{GS} , Gate-to-Source Voltage	$\pm 30\text{V}$
E_{AS} , Single Pulse Avalanche Energy ⁽²⁾	3000mJ
dv/dt , Peak Diode Recovery dv/dt ⁽³⁾	15V/ns
P_D , Power Dissipation	480W
P_D , Derating Factor above 25°C	4.8W/ $^\circ\text{C}$
T_J , Operating Junction Temperature Range	150°C
T_{STG} , Storage Temperature Range	$-55^\circ\text{C} \sim +150^\circ\text{C}$
T_L , Maximum Temperature for Soldering	260°C
$R_{\theta JA}$, Junction-to-Ambient	62 $^\circ\text{C}/\text{W}$
$R_{\theta JC}$, Junction-to-Case	0.21 $^\circ\text{C}/\text{W}$

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Pulse width limited by maximum junction temperature

(2) $L=10\text{mH}$, $V_{DS}=50\text{V}$, Start $T_J=25^\circ\text{C}$

(3) $I_{SD}=75\text{A}$, $di/dt \leq 100\text{A}/\mu\text{s}$, $V_{DD} \leq B_{VDS}$, Start $T_J=25^\circ\text{C}$



ELECTRICAL CHARACTERISTICS

T_c = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF Characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	650	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} / ΔT _J	I _D =250μA Reference 25°C	-	0.6	-	V/°C
Drain to Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =520V, V _{GS} =0V, T _J =125°C	-	-	100	
Gate to Source Forward Leakage	I _{GSS(F)}	V _{GS} =+30V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{GS} =-30V	-	-	-100	nA
ON Characteristics						
Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =35A *	-	0.035	0.041	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D =250μA*	3.5	4.0	4.5	V
Dynamic Characteristics						
Gate Resistance	R _g	f=1.0MHz	-	0.7	-	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz	-	7360	-	pF
Output Capacitance	C _{oss}		-	790	-	
Reverse Transfer Capacitance	C _{rss}		-	30	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =50A, V _{DD} =400V, V _{GS} =13V, R _G =1.8Ω	-	34	-	ns
Rise Time	t _r		-	28	-	
Turn-Off Delay Time	t _{d(OFF)}		-	127	-	
Fall Time	t _f		-	8	-	
Total Gate Charge	Q _g	I _D =70A, V _{DD} =520V, V _{GS} =10V	-	161	-	nC
Gate to Source Charge	Q _{gs}		-	47	-	
Gate to Drain ("Miller") Charge	Q _{gd}		-	64	-	
Source-Drain Diode Characteristics						
Continuous Source Current (Body Diode)	I _S	T _c =25°C	-	-	75	A
Maximum Pulsed Current (Body Diode)	I _{SM}		-	-	300	A
Diode Forward Voltage	V _{SD}	I _S =75A , V _{GS} =0V*	-	-	1.2	V
Reverse Recovery Time	T _{rr}	I _S =45A, T _J =25°C dIF/dt =100A/μs V _{GS} =0V	-	250	-	ns
Reverse Recovery Charge	Q _{rr}		-	2000	-	nC

*Pulse width tp≤300μs, δ≤2%



TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Safe Operating Area

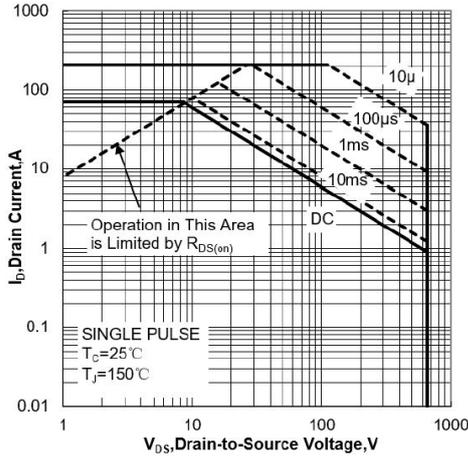


Fig2. Power Dissipation

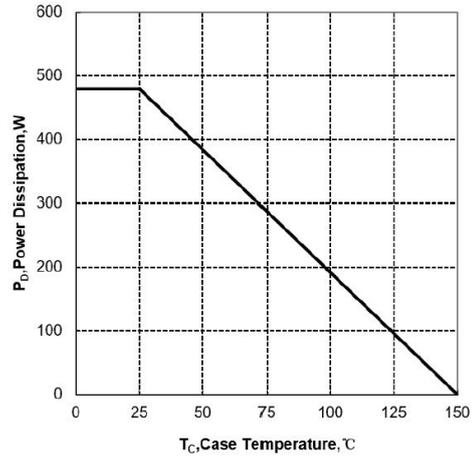


Fig3. Max Thermal Impedance

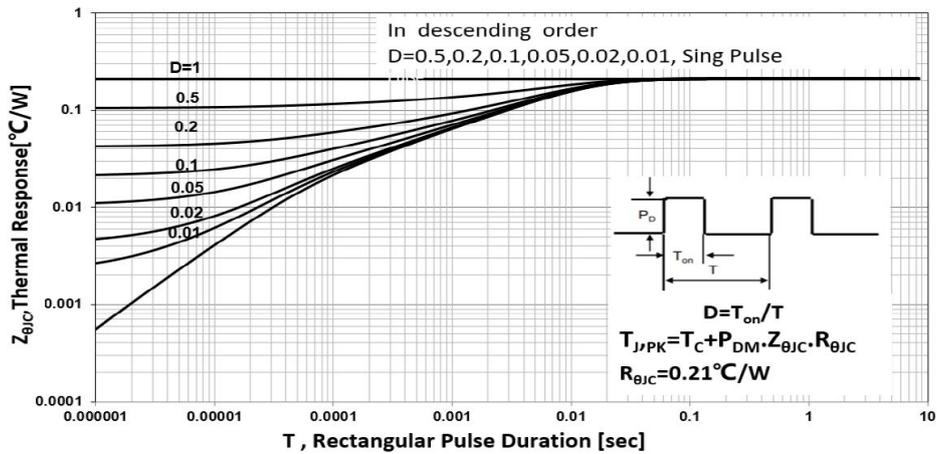


Fig4. Typical Output Characteristics

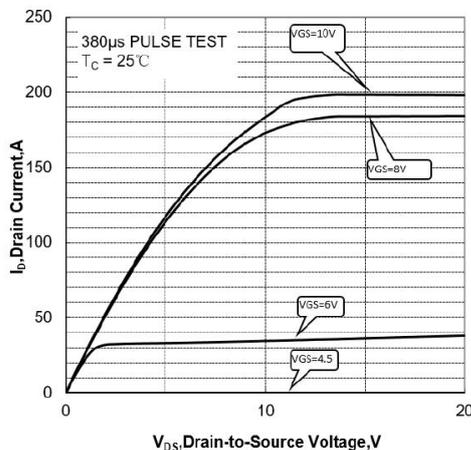


Fig5. Typical Transfer Characteristics

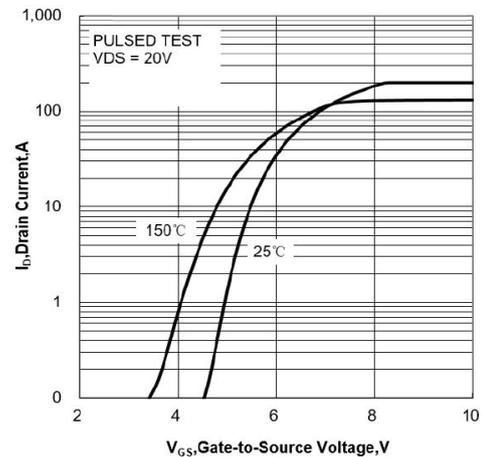




Fig6. Typical Drain to Source ON Resistance vs. Drain Current

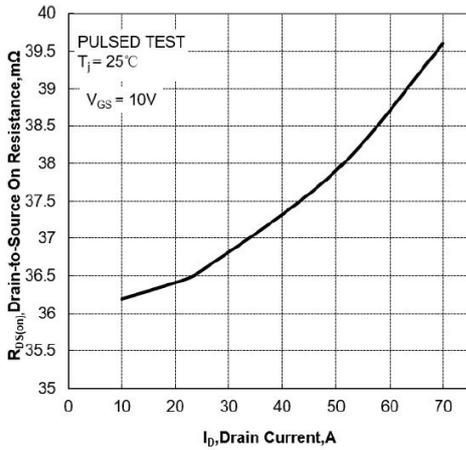


Fig7. Typical Drain to Source on Resistance vs. Junction Temperature

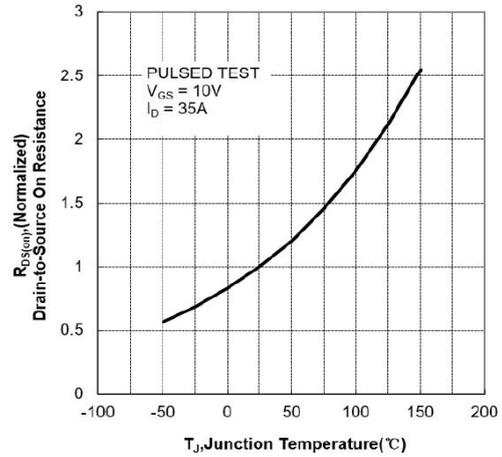


Fig8. Typical Threshold Voltage vs. Junction Temperature

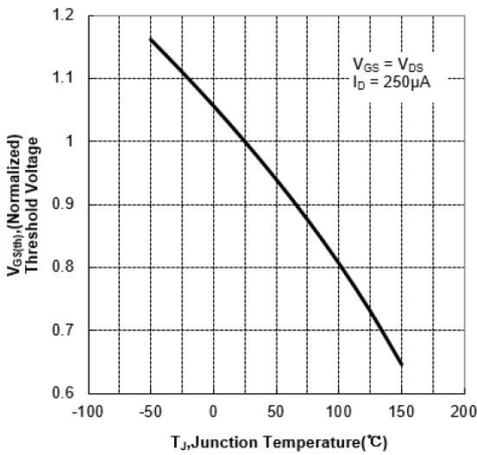


Fig9. Typical Breakdown Voltage vs. Junction Temperature

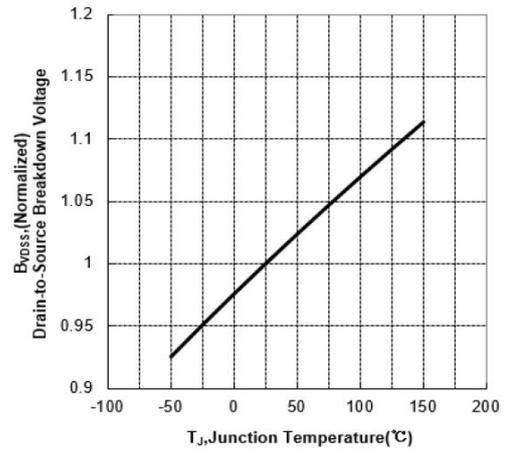


Fig10. Typical Capacitance vs. Drain to Source Voltage

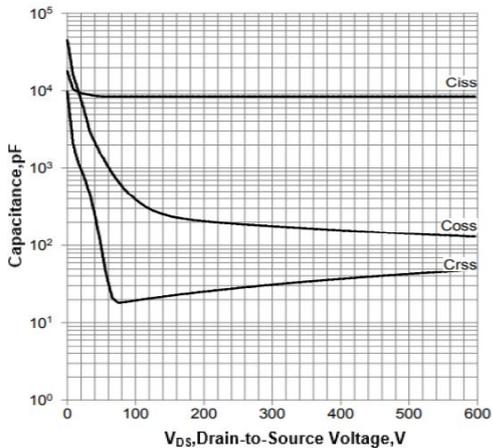


Fig11. Typical Gate Charge vs. Gate to Source Voltage

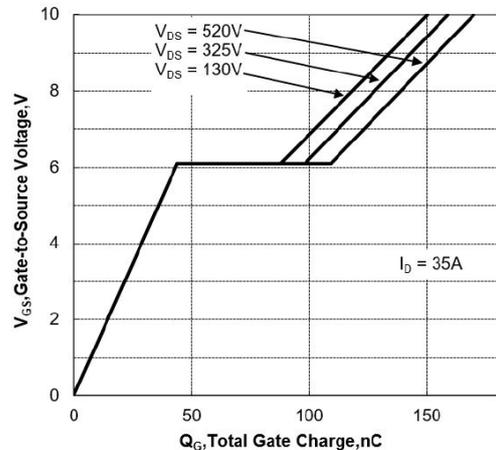




Fig12. Gate Charge Test Circuit

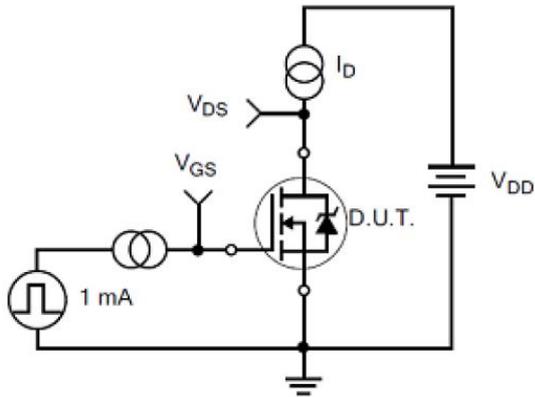


Fig13. Gate Charge Waveforms

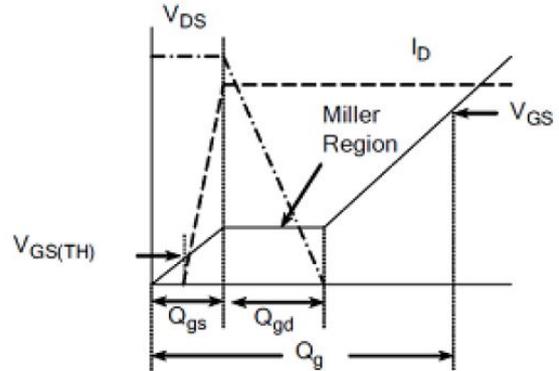


Fig14. Resistive Switching Test Circuit

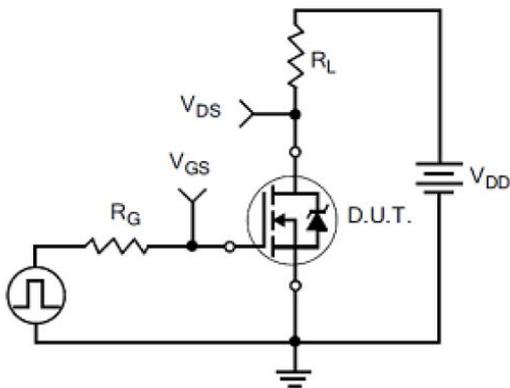


Fig15. Resistive Switching Waveforms

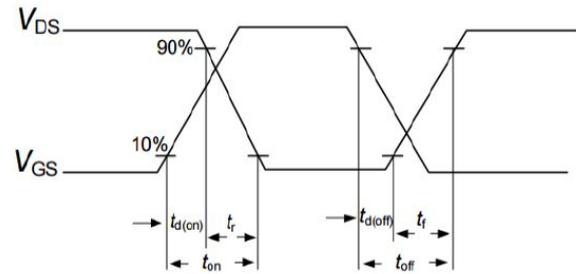


Fig16. Diode Reverse Recovery Test Circuit

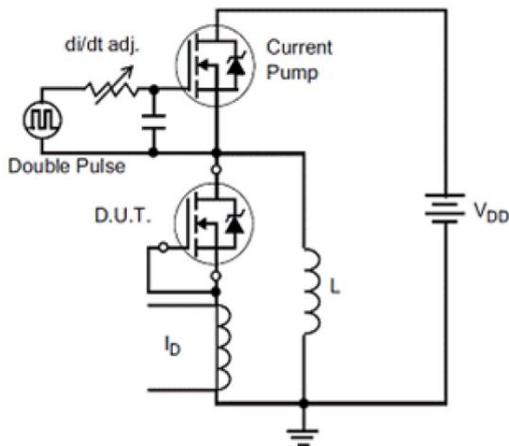


Fig17. Diode Reverse Recovery Waveform

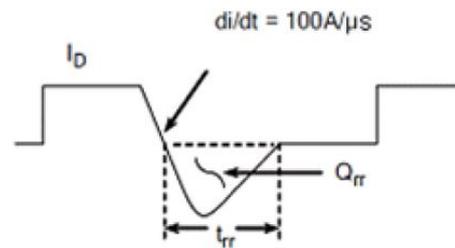




Fig18. Unclamped Inductive Switching Test Circuit

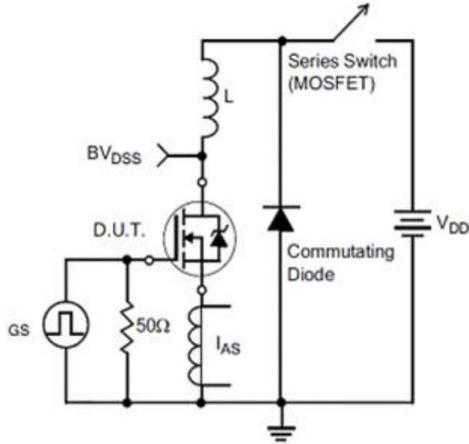
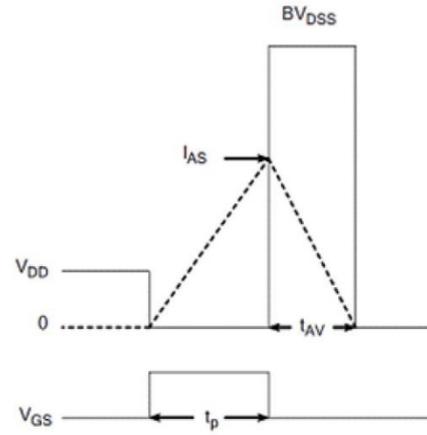


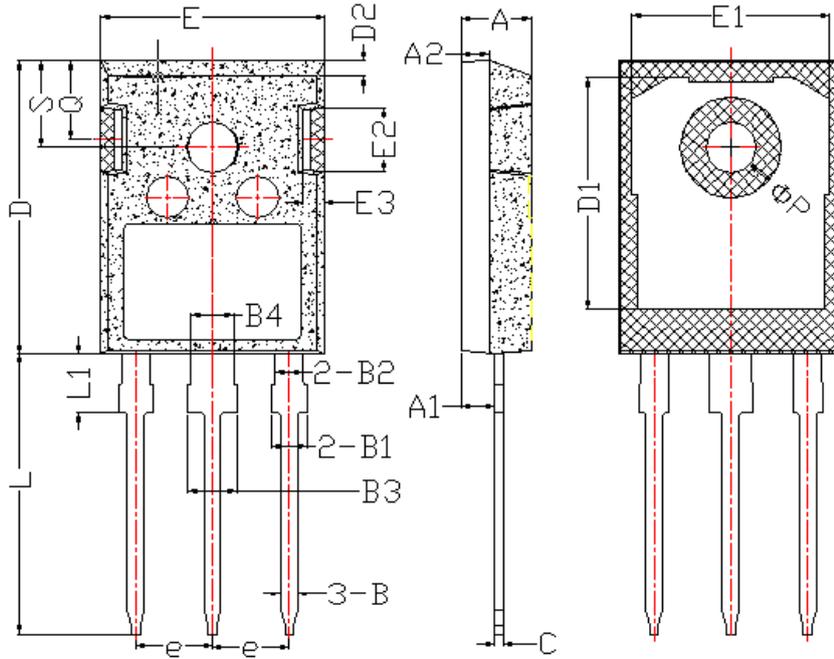
Fig19. Unclamped Inductive Switching Waveform





PACKAGE INFORMATION

Dimension in TO-247 (Unit: mm)



Symbol	Min.	Max.
A	4.900	5.160
A1	2.270	2.530
B	1.850	2.110
B1	1.070	1.330
B2	1.900	2.410
B3	1.750	2.150
B4	2.870	3.130
C	0.550	0.680
D	20.820	21.100
D1	16.250	17.650
D2	1.050	1.350
E	15.700	16.030
E1	13.100	14.150
E2	3.680	5.100
E3	1.680	2.600
e	5.440	
L	19.800	20.310
L1	4.170	4.470
ΦP	3.500	3.700
Q	5.490	6.000
S	6.040	6.300



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