



**DESCRIPTION**

The AM60R036 is available in TO-247and TO-3PN Packages

BVDSS	RDSON	ID
650V	0.032Ω	75A

Application:

High Frequency Switching Mode Power Supply

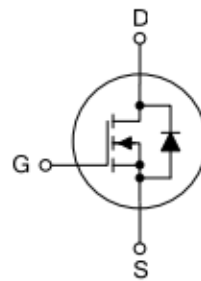
**FEATURE**

- Fast Switching
- Improved dv/dt capability

**ORDERING INFORMATION**

Package Type	Part Number	
TO-247 SPQ: 30pcs/Tube	TL3F	AM60R036TL3FU
		AM60R036TL3FVU
TO-3PN SPQ: 30pcs/Tube	TX	AM60R036TXU
		AM60R036TXVU
Note	U: Tube V: Halogen free Package	
AiT provides all RoHS products		

**PIN DESCRIPTION**



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

**ABSOLUTE MAXIMUM RATINGS**

T<sub>C</sub> = 25°C, unless otherwise specified.

V <sub>DSS</sub> , Drain-to-Source Voltage	600V
I <sub>D</sub> , Continuous Drain Current	75A
I <sub>D</sub> , Continuous Drain Current T <sub>C</sub> = 100 °C	48A
I <sub>DM</sub> , Pulsed Drain Current <sup>(1)</sup>	300A
V <sub>GS</sub> , Gate-to-Source Voltage	±30V
E <sub>AS</sub> , Single Pulse Avalanche Energy <sup>(2)</sup>	2200mJ
dv/dt, Peak Diode Recovery dv/dt <sup>(3)</sup>	15V/ns
P <sub>D</sub> , Power Dissipation	480W
P <sub>D</sub> , Derating Factor above 25°C	4.2W/°C
T <sub>J</sub> , Operating Junction Temperature Range	150°C
T <sub>STG</sub> , Storage Temperature Range	-55°C~+150°C
T <sub>L</sub> , Maximum Temperature for Soldering	260°C
R <sub>θJA</sub> , Junction-to-Ambient	62°C/W
R <sub>θJC</sub> , Junction-to-Case	0.24°C/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=10mH, V<sub>Ds</sub>=50V, Start T<sub>J</sub>=25°C

(3) I<sub>SD</sub> =75A, di/dt ≤100A/us, V<sub>DD</sub>≤B<sub>VDS</sub>, Start T<sub>J</sub>=25°C



**ELECTRICAL CHARACTERISTICS**

T<sub>c</sub> = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
<b>OFF Characteristics</b>						
Drain to Source Breakdown Voltage	V <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	600	-	-	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> / ΔT <sub>J</sub>	I <sub>D</sub> =250μA Reference 25°C	-	0.58	-	V/°C
Drain to Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =600V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	-	-	1	μA
		V <sub>DS</sub> =480V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	-	-	100	
Gate to Source Forward Leakage	I <sub>GSS(F)</sub>	V <sub>GS</sub> =+30V	-	-	100	nA
Gate to Source Reverse Leakage	I <sub>GSS(R)</sub>	V <sub>GS</sub> =-30V	-	-	-100	nA
<b>ON Characteristics</b>						
Drain-to-Source, On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =35A *	-	0.032	0.036	Ω
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA*	3.5	4.0	4.5	V
<b>Dynamic Characteristics</b>						
Gate Resistance	R <sub>g</sub>	f=1.0MHz	-	0.98	-	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz	-	7900	-	pF
Output Capacitance	C <sub>oss</sub>		-	9200	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	900	-	
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(ON)</sub>	I <sub>D</sub> =45A, V <sub>DD</sub> =400V, V <sub>GS</sub> =13V, R <sub>G</sub> =1.8Ω	-	30	-	ns
Rise Time	t <sub>r</sub>		-	28	-	
Turn-Off Delay Time	t <sub>d(OFF)</sub>		-	90	-	
Fall Time	t <sub>f</sub>		-	6	-	
Total Gate Charge	Q <sub>g</sub>	I <sub>D</sub> =70A, V <sub>DD</sub> =480V, V <sub>GS</sub> =10V	-	160	-	nC
Gate to Source Charge	Q <sub>gs</sub>		-	46.5	-	
Gate to Drain ("Miller") Charge	Q <sub>gd</sub>		-	57	-	
<b>Source-Drain Diode Characteristics</b>						
Continuous Source Current (Body Diode)	I <sub>S</sub>	T <sub>c</sub> =25°C	-	-	75	A
Maximum Pulsed Current (Body Diode)	I <sub>SM</sub>		-	-	225	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =75A, V <sub>GS</sub> =0V*	-	-	1.2	V
Reverse Recovery Time	T <sub>rr</sub>	I <sub>S</sub> =45A, T <sub>J</sub> =25°C dIF/dt =100A/μs V <sub>GS</sub> =0V	-	620	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	11000	-	nC

\*Pulse width tp≤300μs, δ≤2%



## TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Safe Operating Area

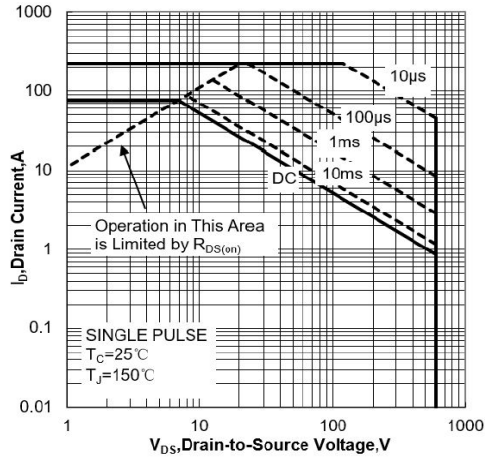


Fig.2 Power Dissipation

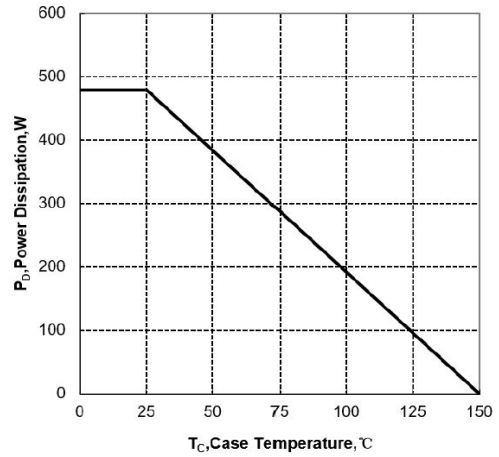


Fig.3 Max Thermal Impedence

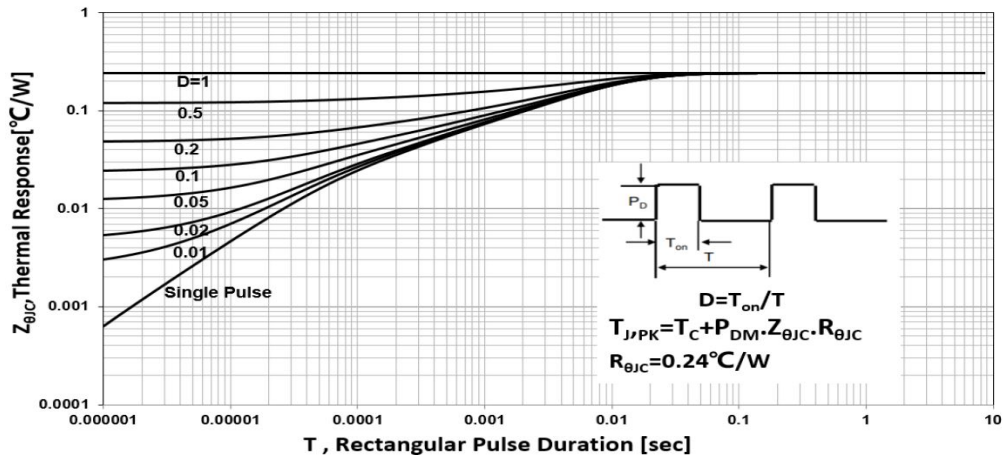


Fig.4 Typical Output Characteristics

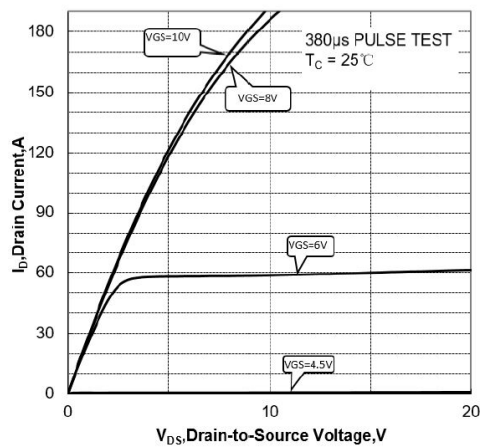


Fig.5 Typical Transfer Characteristics

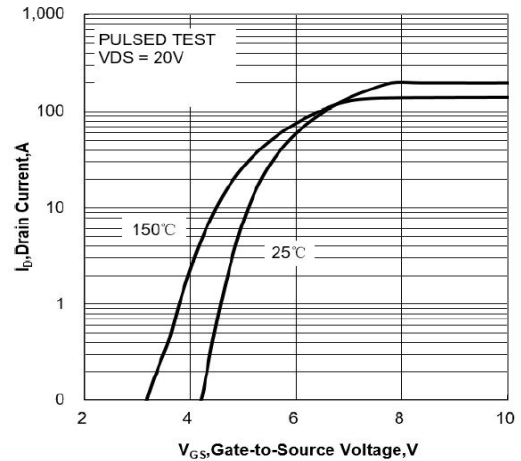




Fig.6 Typical Drain to Source ON Resistance vs. Drain Current

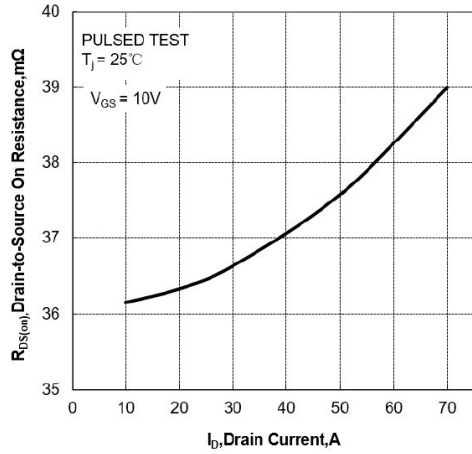


Fig.7 Typical Drain to Source on Resistance vs. Junction Temperature

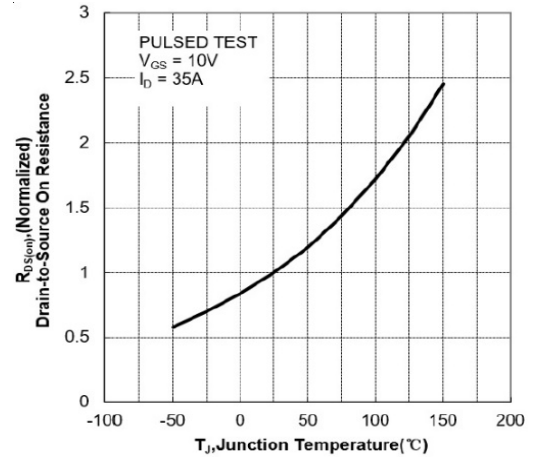


Fig.8 Typical Threshold Voltage vs. Junction Temperature

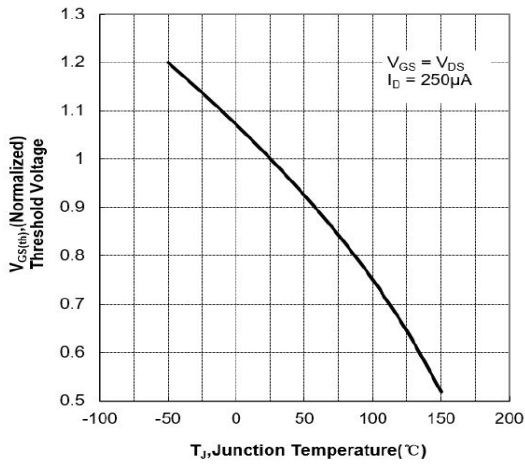


Fig.9 Typical Breakdown Voltage vs. Junction Temperature

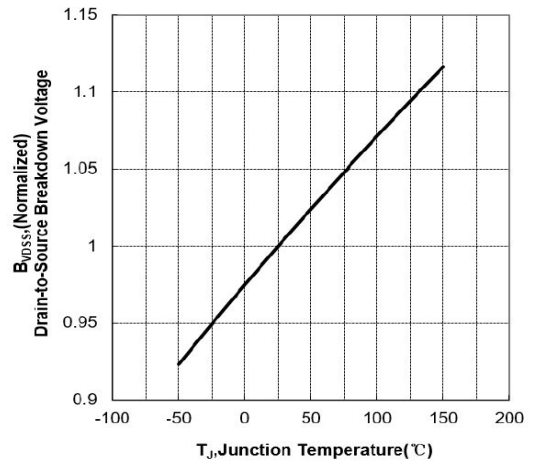


Fig.10 Typical Capacitance vs. Drain to Source Voltage

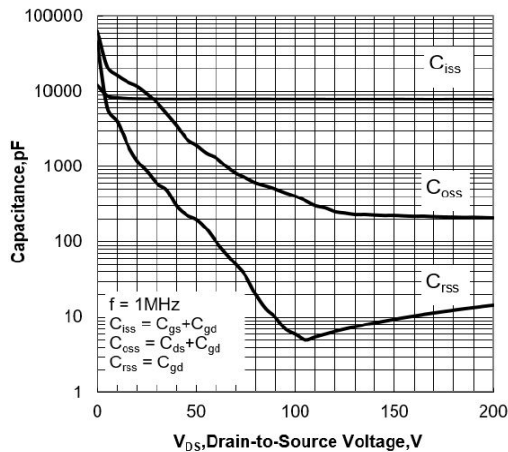


Fig.11 Typical Gate Charge vs. Gate to Source Voltage

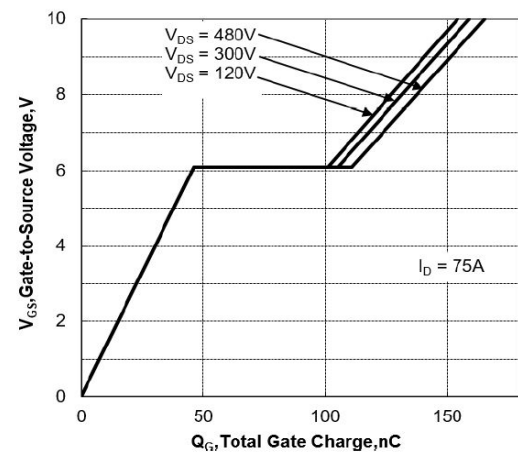




Fig.12 Gate Charge Test Circuit

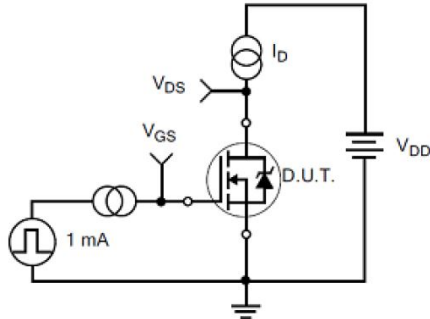


Fig.13 Gate Charge Waveforms

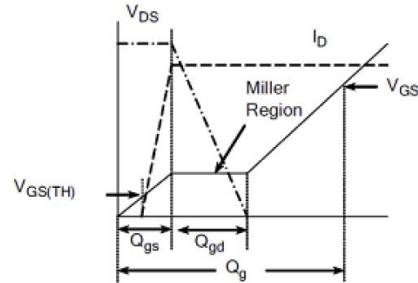


Fig.14 Resistive Switching Test Circuit

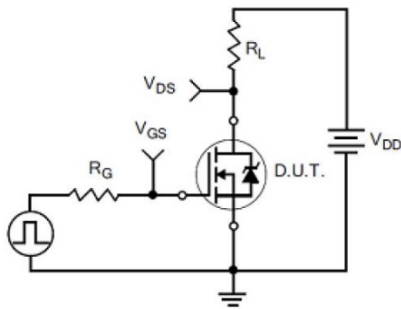


Fig.15 Resistive Switching Waveforms

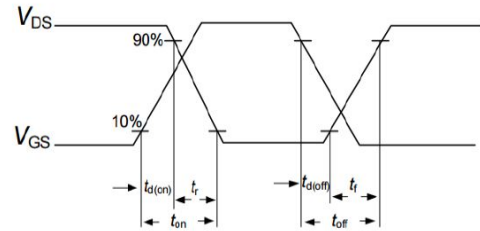


Fig.16 Diode Reverse Recovery Test Circuit

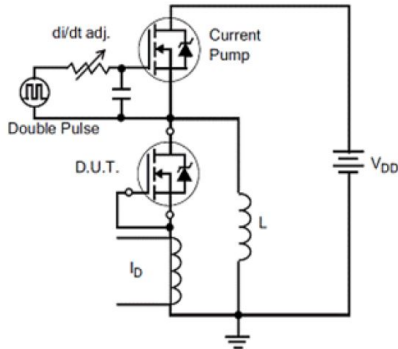


Fig.17 Diode Reverse Recovery Waveform

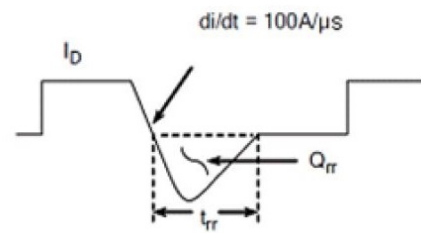


Fig.18 Unclamped Inductive Switching Test Circuit

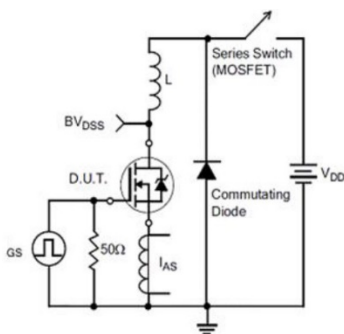
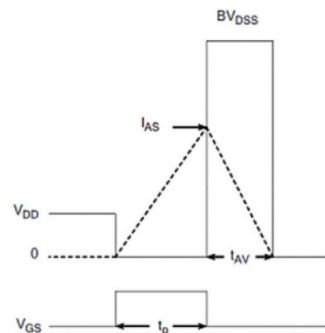


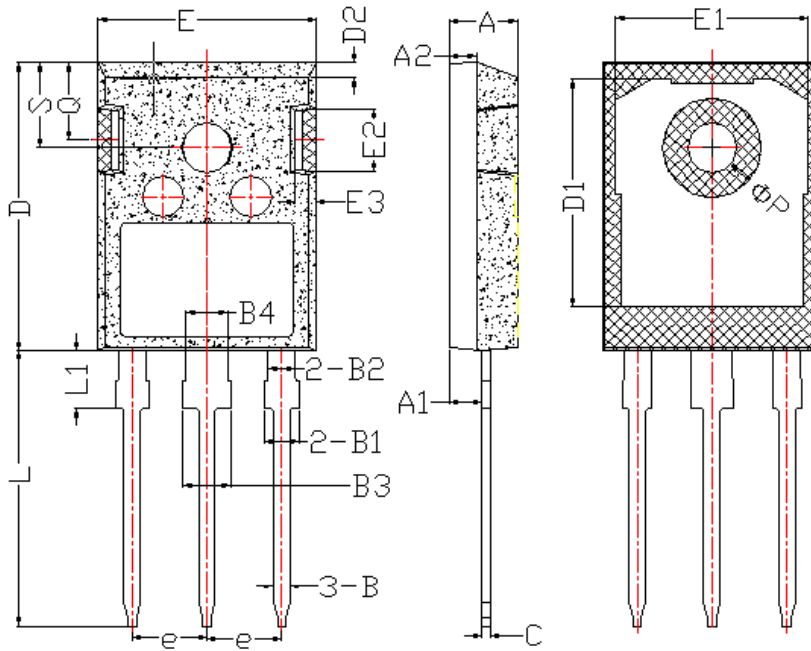
Fig.19 Unclamped Inductive Switching Waveform





**PACKAGE INFORMATION**

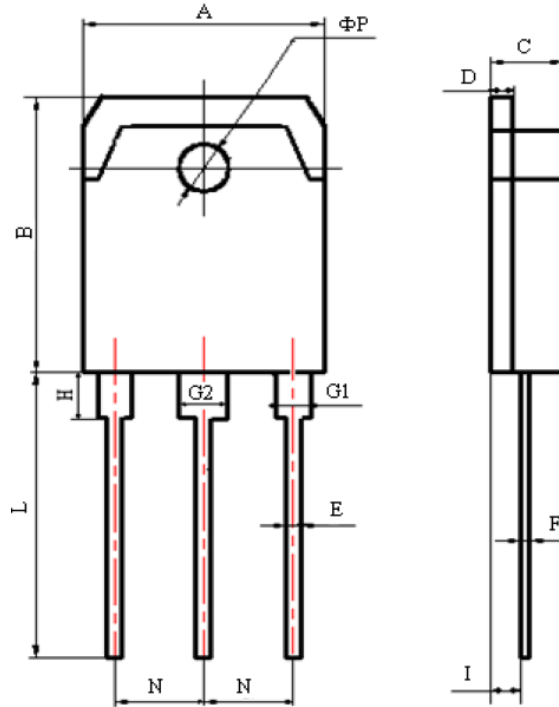
Dimension in TO-247 (Unit: mm)



Symbol	Min.	Max.
A	4.600	5.200
A1	2.200	2.600
B	0.900	1.400
B1	1.750	2.350
B2	1.750	2.150
B3	2.800	3.350
B4	2.800	3.150
C	0.500	0.700
D	20.600	21.300
D1	16.000	18.000
E	15.500	16.100
E1	13.000	14.700
E2	3.800	5.300
E3	0.800	2.600
e	5.200	5.700
L	19.000	20.500
L1	3.900	4.600
ΦP	2.500	3.700
Q	5.200	6.000
S	5.800	6.600



Dimension in TO-3PN (Unit: mm)



Symbol	Min.	Max.
A	15.000	16.000
B	19.200	20.600
C	4.600	5.000
D	1.400	1.600
E	0.900	1.100
F	0.500	0.700
G1	2.000	2.200
G2	3.000	3.200
H	3.000	3.700
I	1.200	2.900
L	19.000	21.000
N	5.250	5.650
ΦP	3.100	3.300





## IMPORTANT NOTICE

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