



DESCRIPTION

The AM47P04 is available in TO-252 Package.

V _{DS}	R _{DS(ON)}	I _D	P _{tot}
- 40V	10.5 mΩ	- 47A	55W

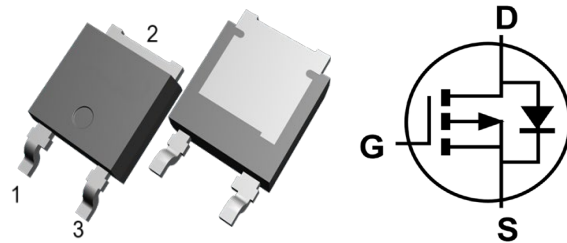
FEATURE

- Extremely low on-resistance R_{DS(on)}
- Excellent Q_g x R_{DS(on)} product (FOM)
- Excellent Low Ciss.
- Low power loss, high power density
- Qualified according to JEDEC criteria

APPLICATION

- Synchronous Rectification for AC/DC Quick Charger
- Battery management
- UPS

PIN DESCRIPTION



ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM47P04DVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

TO-252

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

**ABSOLUTE MAXIMUM RATINGS**

V _{DS} , Drain-Source Voltage		-40 V
I _D , Continuous Drain Current	T _C = 25 °C (Silicon limit)	-47 A
	T _C = 25 °C (Package limit)	-58 A
	T _C = 100 °C (Silicon limit)	-30 A
I _{D pulse} , Pulsed drain current	T _C = 25 °C, t _p = 100 μs	-188 A
E _{AS} , Avalanche Energy, Single pulse	L = 0.5 mH, V _{ds} = - 32 V	83 mJ
V _{GS} , Gate-Source Voltage		±20 V
P _{tot} , Power dissipation	T _C = 25 °C	55 W
T _J , T _{STG} , Operating junction and storage temperature		-55 °C ~ +150 °C
T _{sold} , Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)		260 °C

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.

THERMAL CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Unit
R _{θJC} , Thermal resistance, junction – case.	-	-	2.27	°C/W
R _{θJA} , Thermal resistance, junction – ambient (min. footprint)	-	-	61	°C/W



ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DS}	V _{GS} = 0 V, I _D = - 250 μA	-40	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = - 250 uA	-1.0	-	-2.5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 40 V, V _{GS} = 0 V				
		T _J = 25 °C	-	-	-1	μA
		T _J = 150 °C	-	-	-100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ± 20 V, V _{DS} = 0 V	-	±10	±100	nA
Drain-Source On-state Resistance	R _{DS(ON)}	V _{GS} = - 10 V, I _D = - 8 A	-	10.5	15	mΩ
		V _{GS} = - 4.5 V, I _D = - 8 A		14.2	20	
Transconductance	g _{fs}	V _{DS} = 5 V, I _D = - 8 A	-	28	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V,	-	3144	-	pF
Output Capacitance	C _{oss}	V _{DS} = - 20 V	-	285	-	
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz	-	244	-	
Gate Total Charge	Q _g	V _{GS} = - 10 V, V _{DS} = - 20 V, I _D = - 8 A,		28		nC
Gate-Source Charge	Q _{gs}		-	8	-	
Gate-Drain Charge	Q _{gd}		-	8.5	-	
Turn-on Delay Time	t _{d (on)}	V _{GS} = - 10 V,	-	38	-	ns
Rise Time	t _r	V _{DD} = - 15 V,	-	31	-	
Turn-Off Delay Time	t _{d (off)}	I _D = - 8 A	-	90	-	
Fall Time	t _f	R _{G_ext} = 3 Ω,	-	9.2	-	
Gate Resistance	R _G	V _{GS} = 0 V, V _{DS} = 0 V f = 1 MHz	-	9.2	-	Ω
Body Diode Characteristics						
Body Diode Forward Voltage	V _{SD}	I _{SD} = - 20 A, V _{GS} = 0 V	-	-0.88	-1.2	V
Body Diode Continuous Forward Current	I _S	T _C = 25 °C	-	-	-47	A
Body Diode Pulsed Current	I _S pulse	T _C = 25 °C	-	-	-188	A
Body Diode Reverse Recovery Time	t _{rr}	-	-	-	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	-	-	-	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

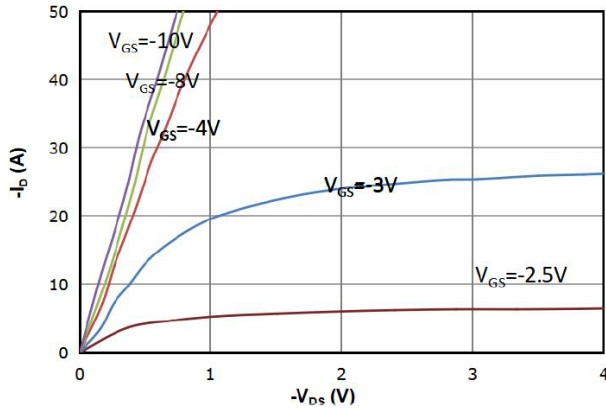


Fig 2. Transfer Characteristics

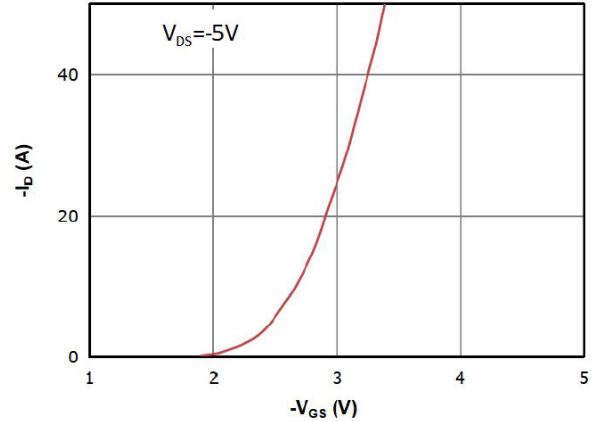


Fig 3. $R_{DS(on)}$ vs. Drain Current and Gate Voltage

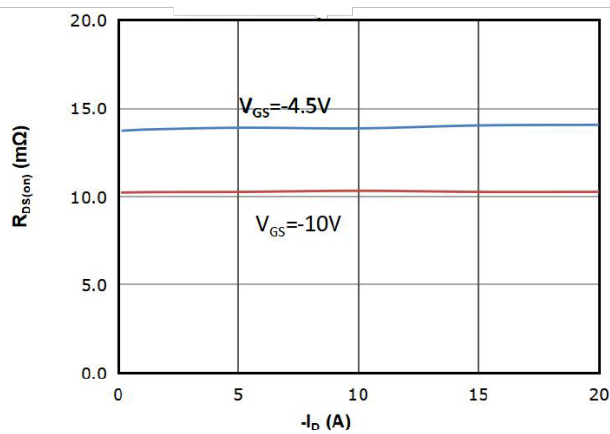


Fig 4. $R_{DS(on)}$ vs. Gate Voltage

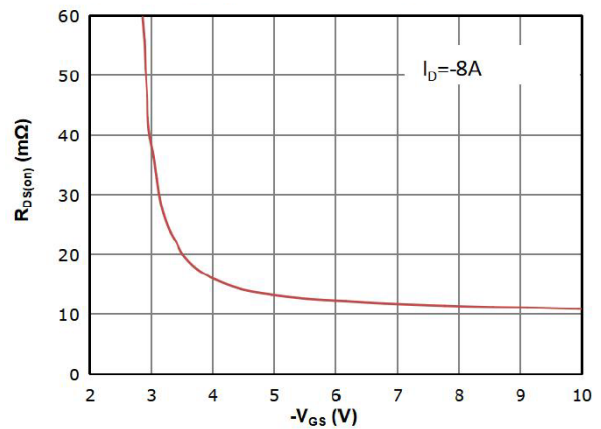


Fig 5. $R_{DS(on)}$ vs. Temperature

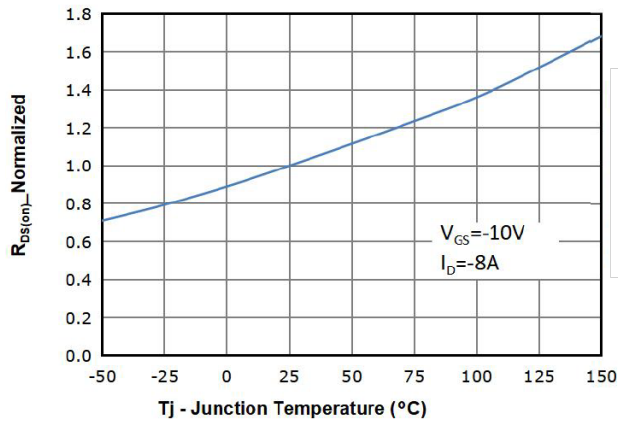


Fig 6. Capacitance Characteristics

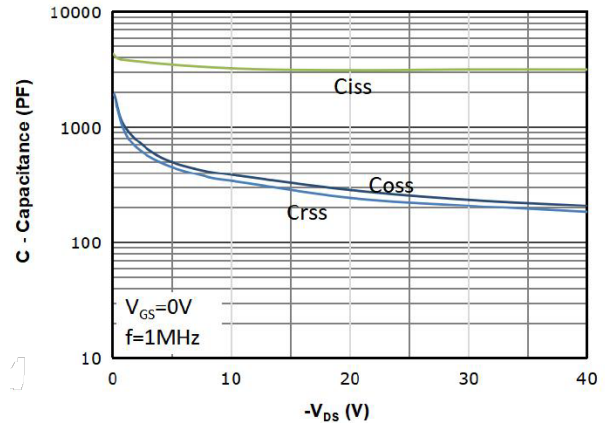




Fig 7. Gate Charge Characteristics

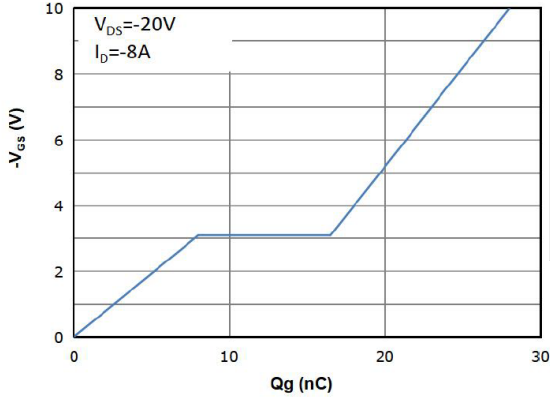


Fig 8. Body-diode Forward Characteristics

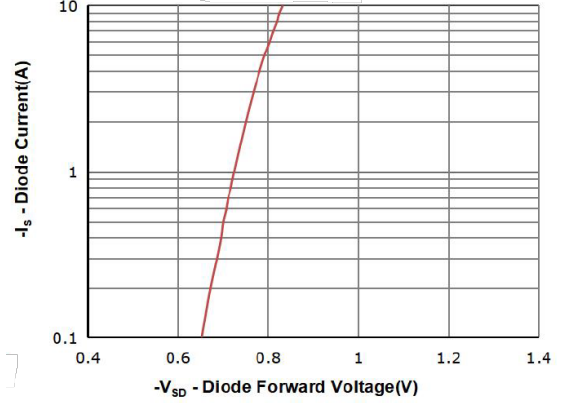


Fig 9. Power Dissipation

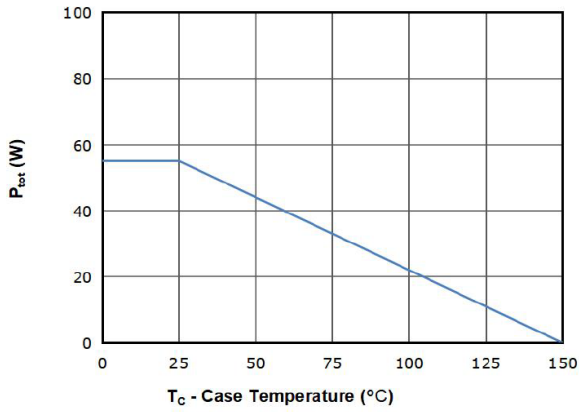


Fig 10. Drain Current Derating

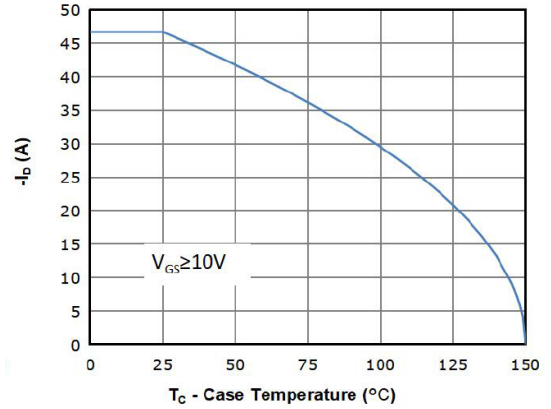


Fig 11. Safe Operating Area

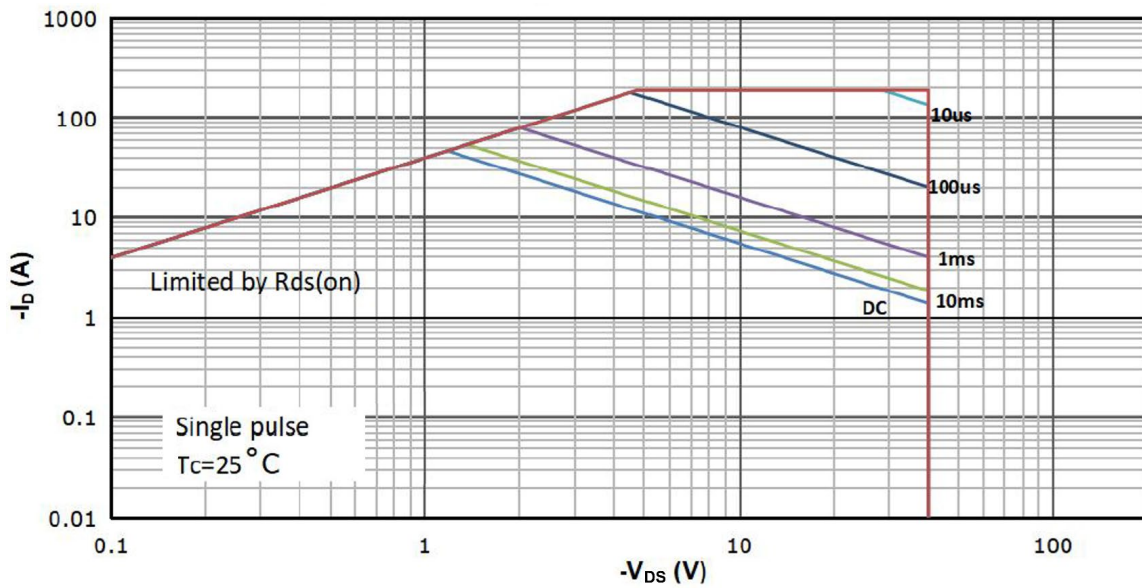
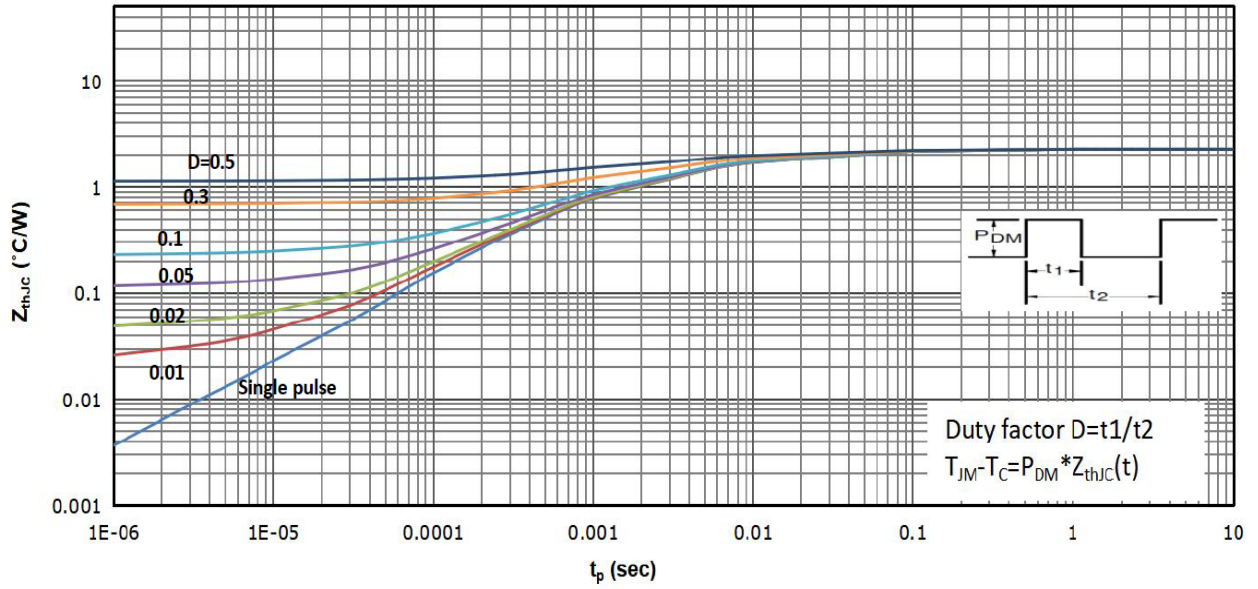




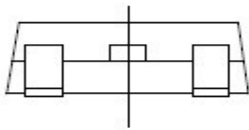
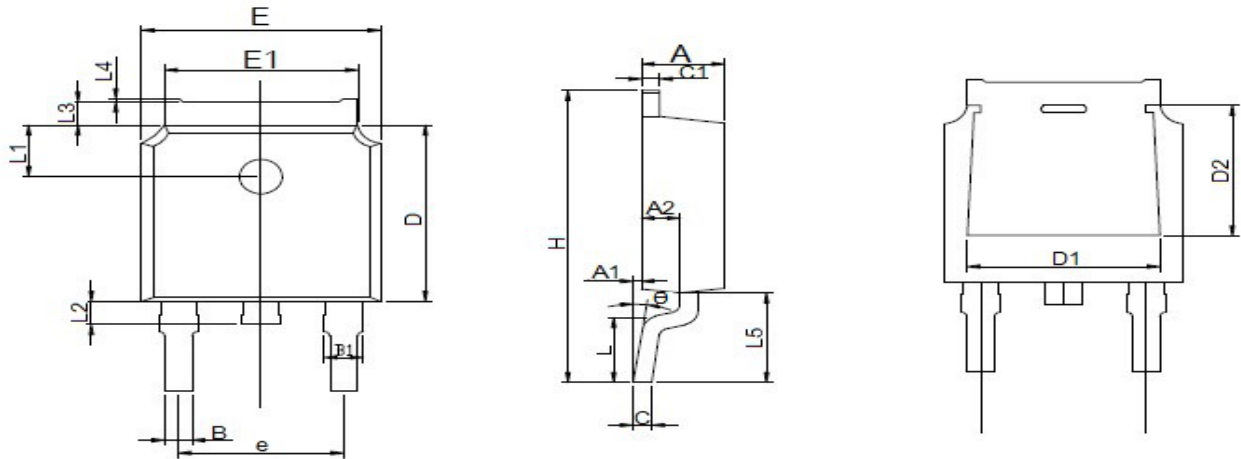
Fig 12. Max. Transient Thermal Impedance



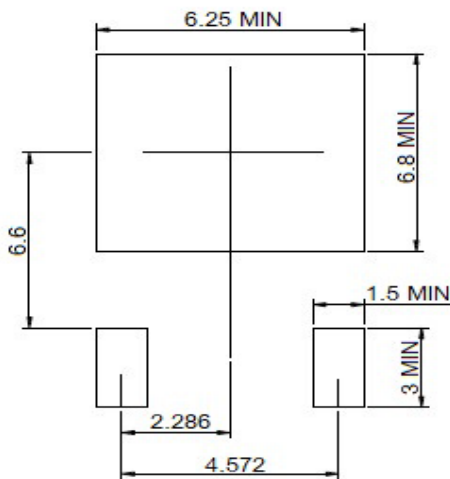


PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



RECOMMENDED LAND PATTERN



Symbol	Millimeter	
	Min.	Max.
A	2.150	2.450
A1	0.050	0.200
A2	0.910	1.220
B	0.660	0.860
B1	0.930	1.230
C	0.400	0.600
C1	0.400	0.600
D	5.950	6.250
D1	4.800	
D2	3.800	
E	6.450	6.750
E1	5.120	5.520
L	1.650	
L1	1.580	1.980
L2	0.600	1.000
L3	0.700	1.000
L4	0.000	0.200
L5	2.800	3.400
H	9.800	10.400
θ	0°	8°
e	4.572 REF	



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