

**DESCRIPTION**

The AM2039 is available in DFN1006-3L Packages.

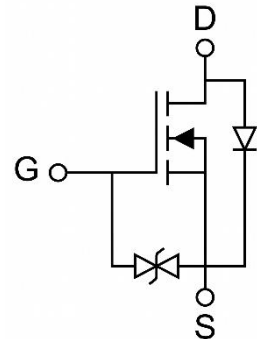
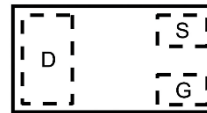
BVDSS	RDSON	ID
-20V	400mΩ@-4.5V	-0.66A

FEATURE

- Trench Technology Power MOSFET
- $R_{DS(ON)}$, Typ= 400mΩ @ $V_{GS}=-4.5V$
- Low $R_{DS(on)}$ and Gate Charge
- ESD Protected

APPLICATION

- Load Switching
- Low Current Inverters
- Low Current DC/DC Converters

PIN DESCRIPTION**ORDERING INFORMATION**

Package Type	Part Number	
DFN1006-3L SPQ: 10,000pcs/Reel	J3	AM2039J3R
		AM2039J3VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

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

ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	-20	V
Gate-to-Source Voltage	V_{GS}	±12	V
Continuous Drain Current ^{1,5}	I_D	-0.66	A
Pulsed Drain Current ²	I_{DM}	-2.0	A
Power Dissipation ^{4,5}	P_D	0.3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction to Ambient ⁵	$R_{\theta JA}$	416	°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.



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V	-	-	-1	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V	-	-	±10	μA
Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-0.5A	-	400	520	mΩ
		V _{GS} =-2.5V, I _D =-0.3A	-	570	780	
		V _{GS} =-1.8V, I _D =-0.12A	-	810	1100	
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.7	-1.0	V
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _D =-0.4A	-	1	-	S
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{GS} = 0V, V _{DS} = -10V f = 1.0MHz	-	79	-	pF
Output Capacitance	C _{oSS}		-	15	-	
Reverse Transfer Capacitance	C _{rSS}		-	13	-	
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-0.2A, V _{GS} =-4.5V	-	2.26	-	nC
Gate-Source Charge	Q _{gs}		-	0.45	-	
Gate-Drain(“Miller”) Charge	Q _{gd}		-	0.24	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} =-4.5V, V _{DD} =-10V, R _L =50Ω, R _G =3Ω	-	8	-	ns
Rise Time	t _r		-	5.5	-	
Turn-Off Delay Time	t _{d(off)}		-	30	-	
Fall Time	t _f		-	17	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ³	V _{DS}	I _S =-0.5A, V _{GS} =0V	-	-	1.2	V

Notes:

- 1.The maximum current rating is limited by package.
- 2.Repetitive rating: pulse width limited by T_J(MAX) = 150°C.
- 3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation PD is limited by T_J(MAX) = 150°C.
- 5.Device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Typical Output Characteristics

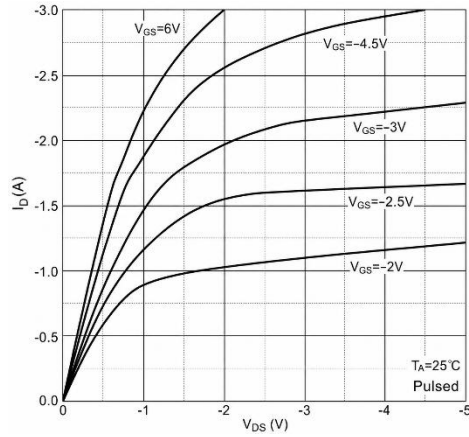


Fig 2. Typical Transfer Characteristics

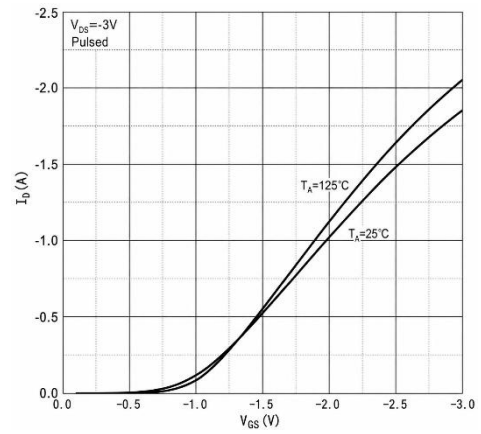


Fig 3. Forward Characteristics of Reverse

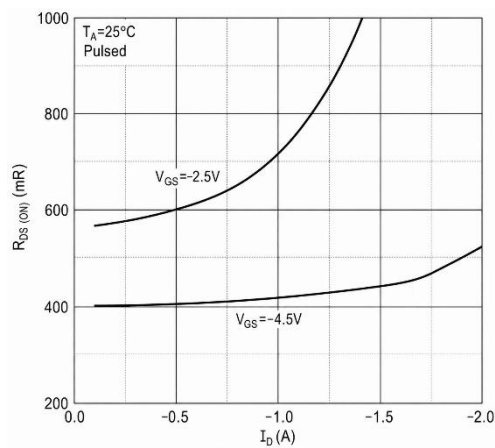


Fig 4. $R_{DS(ON)}$ vs. V_{GS}

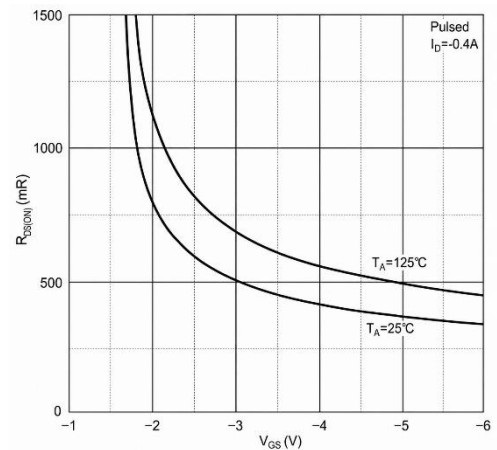


Fig 5. I_S vs. V_{SD}

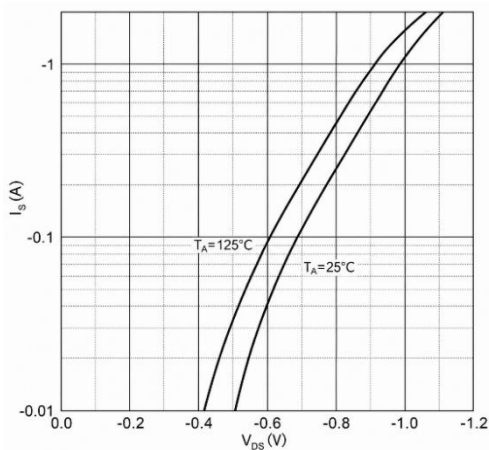
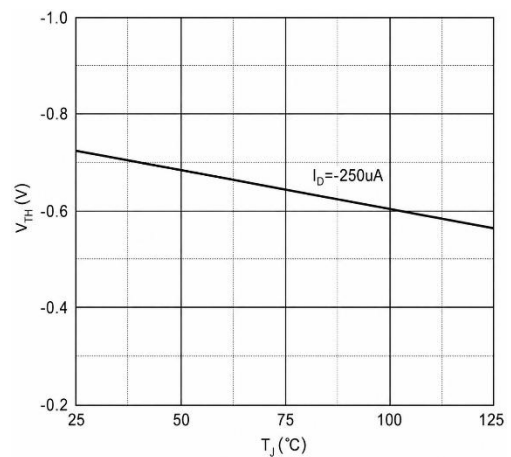


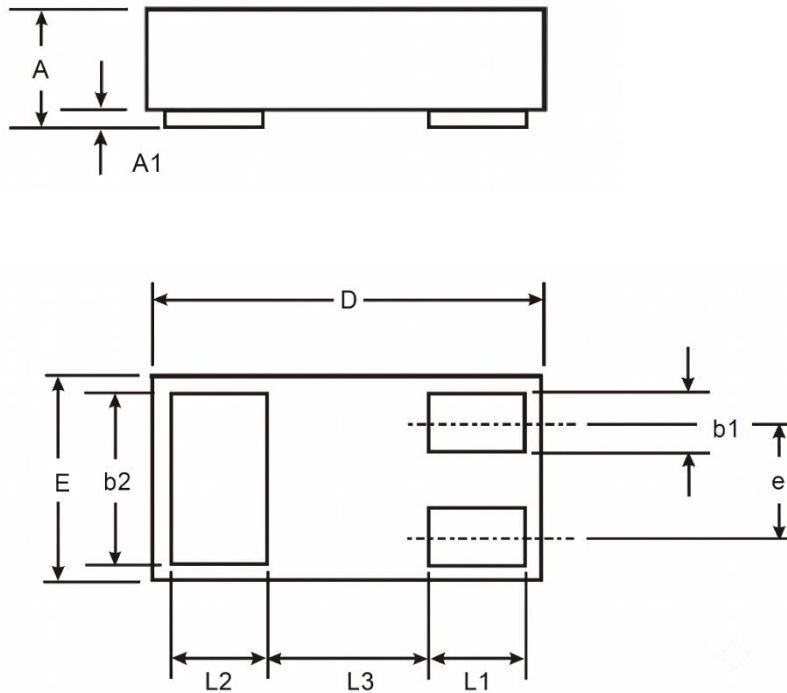
Fig 6. Threshold Voltage





PACKAGE INFORMATION

Dimension in DFN1006-3L (Unit: mm):



Symbol	Millimeters		
	Min	Typ	Max
A	0.47	0.50	0.53
A1	0	0.03	0.05
b1	0.10	0.15	0.20
b2	0.45	0.50	0.55
D	0.95	1.00	1.075
E	0.55	0.60	0.675
e	-	0.35	-
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
L3	-	0.40	-



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