DESCRIPTION

The AM8204 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications .It is ESD protested.

AM8204 is available in a SOT-26 package.

FEATURES

- V_{DS}= 20V, I_D= 6A
  Typ.$R_{DS(ON)}$ = 17mΩ @ V_{GS}= 4.5V
  Typ.$R_{DS(ON)}$ = 22mΩ @ V_{GS}= 2.5V
  ESD Rating: 2000V HBM
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package
- Available in a SOT-26 package.

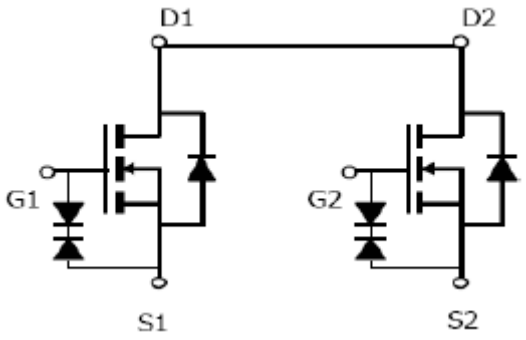
ORDERING INFORMATION

Package Type	Part Number	
SOT-26	E6	AM8204E6R
		AM8204E6VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

APPLICATION

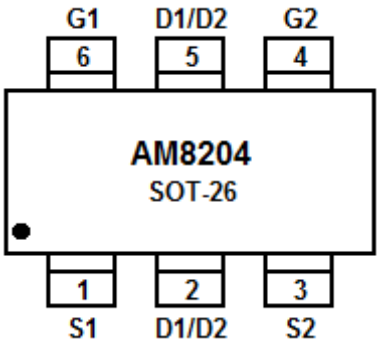
- PWM application
- Load switch

PIN DESCRIPTION



Schematic diagram

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	S1	Source
2	D1/D2	Drain
3	S2	Source
4	G2	Gate
5	D1/D2	Drain
6	G1	Gate

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted

V_{DS}, Drain-Source Voltage	20V
V_{GS}, Gate-Source Voltage	±12V
I_D, Drain Current-Continuous	6A
I_{DM}, Drain Current-Pulsed NOTE1	30A
P_D, Maximum Power Dissipation	1.25W
T_J,T_{STG}, Operating Junction and Storage Temperature Range	-55℃~150℃

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Ambient NOTE2	$R_{\theta JA}$	100	°C/W

ELECTRICAL CHARACTERISTICS

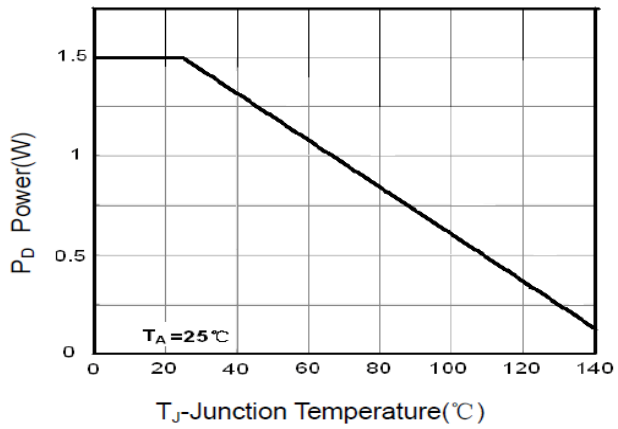
T_A = 25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±10	μA
On Characteristics NOTE3						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.45	0.7	1.0	V
Drain-Source On-state Resistance	$R_{DS(ON)}$	V_{GS}=4.5V,I_D=6A	-	17	24	mΩ
		V_{GS}=2.5V,I_D=5A	-	22	30	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=6A	-	20	-	S
Dynamic CharacteristicsNOTE4						
Input Capacitance	C_{ISS}	V_{DS}=10V, V_{GS}=0V, F=1.0MHz	-	650	-	pF
Output Capacitance	C_{OSS}		-	140	-	
Reverse Transfer Capacitance	C_{RSS}		-	60	-	
Switching Characteristics NOTE4						
Turn-on Delay Time	$t_{D(ON)}$	V_{DD}=10V, R_L=1.5Ω, V_{GS}=5V, R_{GEN}=3Ω	-	0.5	-	ns
Turn-on Rise Time	t_R		-	1	-	
Turn-off Delay Time	$t_{D(OFF)}$		-	12	-	
Turn-off Fall Time	t_F		-	4	-	
Total Gate Charge	Q_G	V_{DS}=10V, I_D=6A V_{GS}=4.5V	-	8	-	nC
Gate-Source Charge	Q_{GS}		-	2.5	-	
Gate-Drain Charge	Q_{GD}		-	3	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage NOTE3	V_{SD}	V_{GS}=0V, I_S=1A,	-	-	1.2	V
Diode Forward Current NOTE2	I_S		-	-	6	A

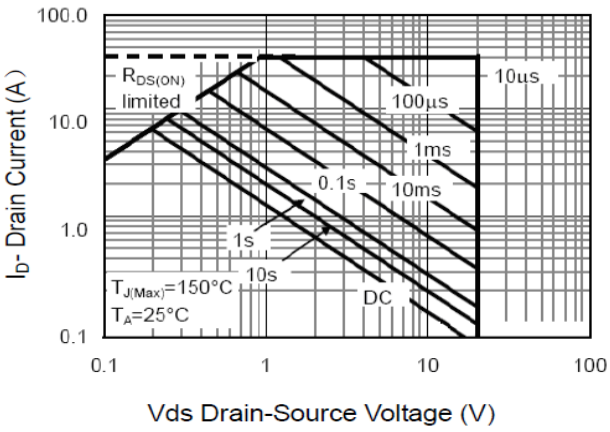
NOTE1: Repetitive Rating: Pulse width limited by maximum junction temperature.
NOTE2: Surface Mounted on FR4 Board, t ≤ 10 sec.
NOTE3: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
NOTE4: Guaranteed by design, not subject to production

TYPICAL CHARACTERISTICS

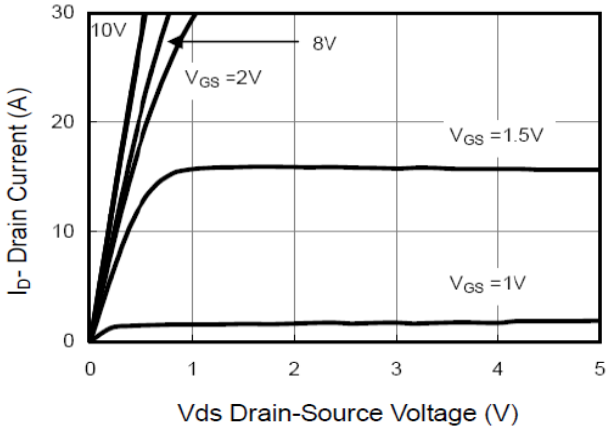
1. Power Dissipation



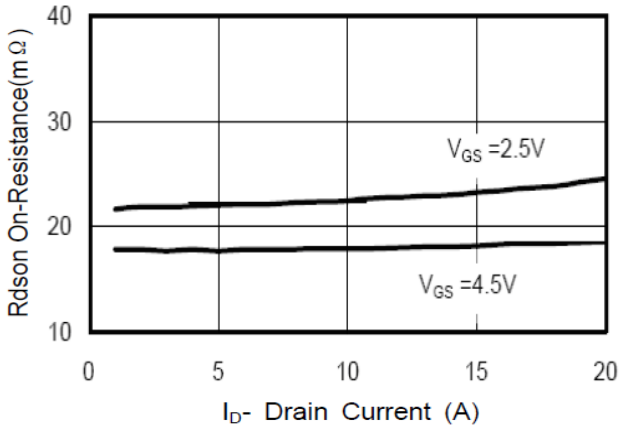
2. Safe Operation Area



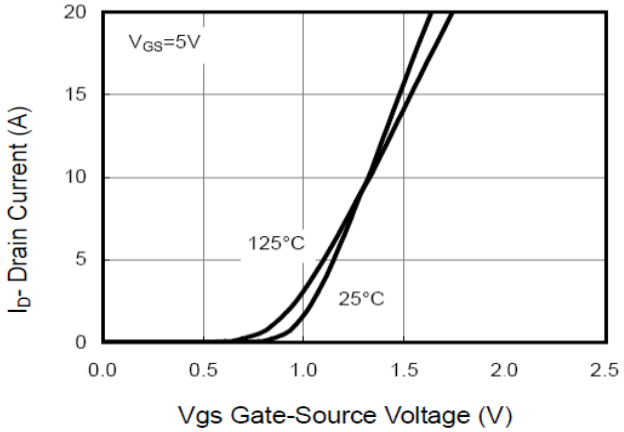
3. Output Characteristics



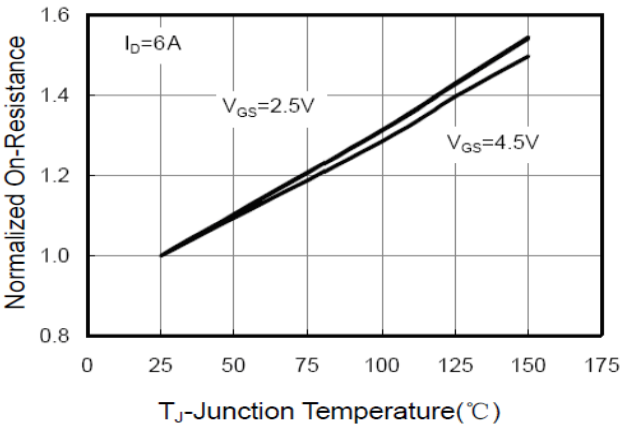
4. Drain-Source On-Resistance



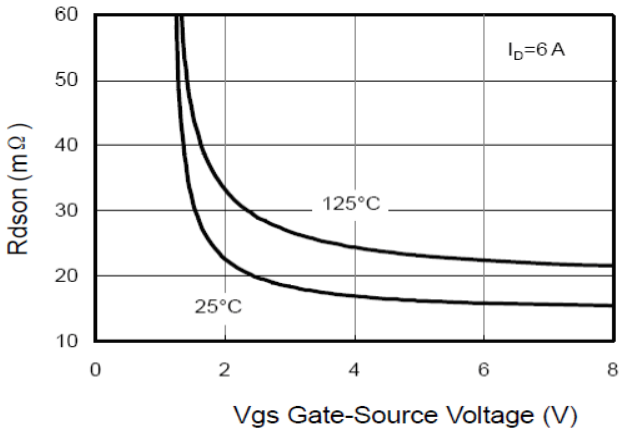
5. Transfer Characteristics



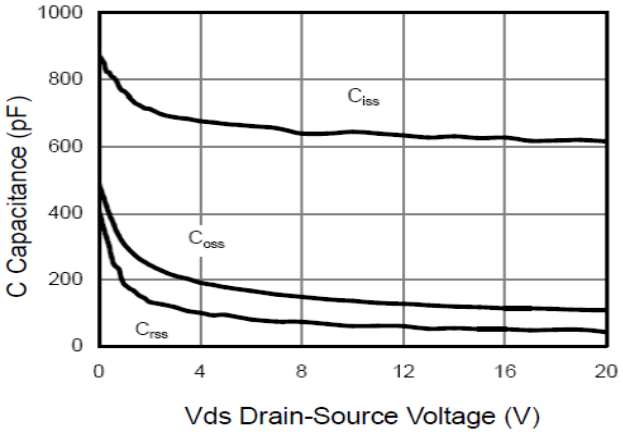
6. Drain-Source On-Resistance



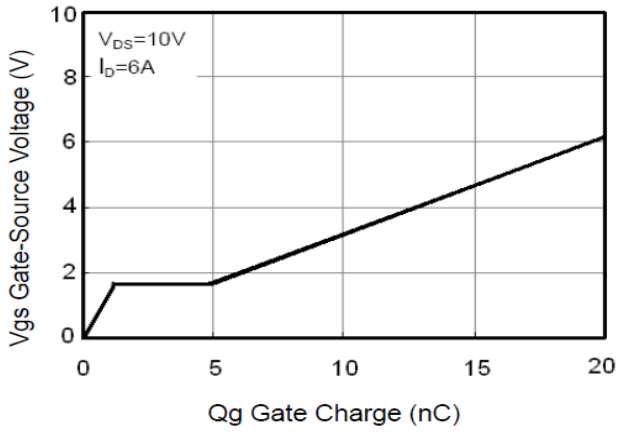
7. R_{DSON} vs. V_{GS}



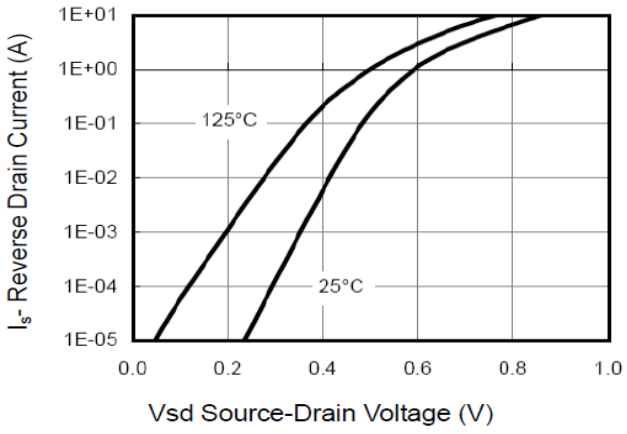
8. Capacitance vs. V_{DS}



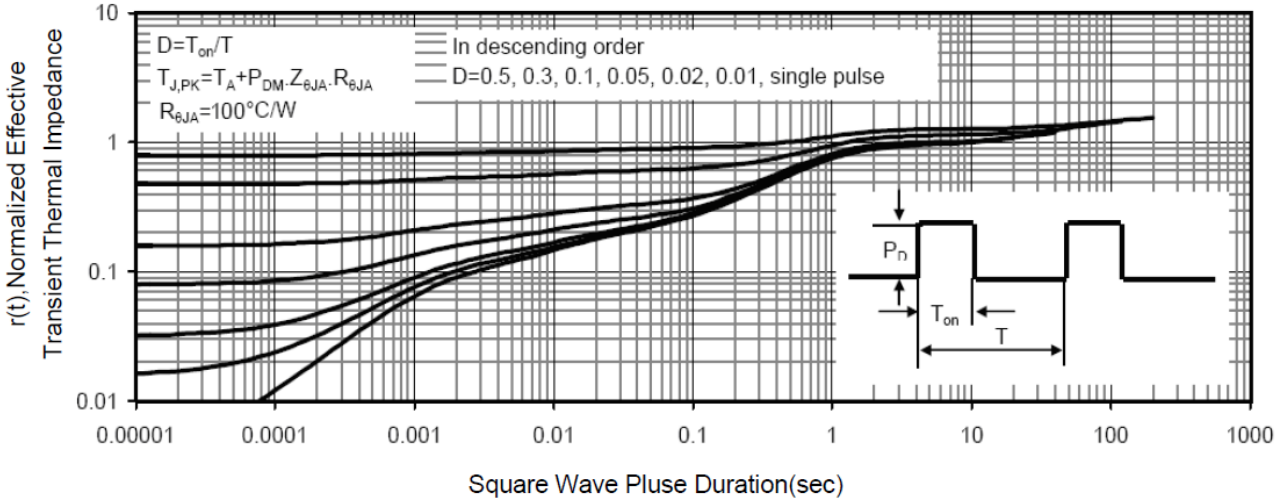
9. Gate Charge



10. Source- Drain Diode Forward

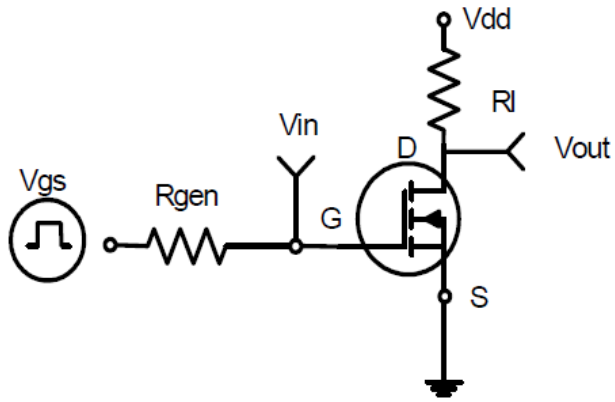


11. Normalized Maximum Transient Thermal Impedance

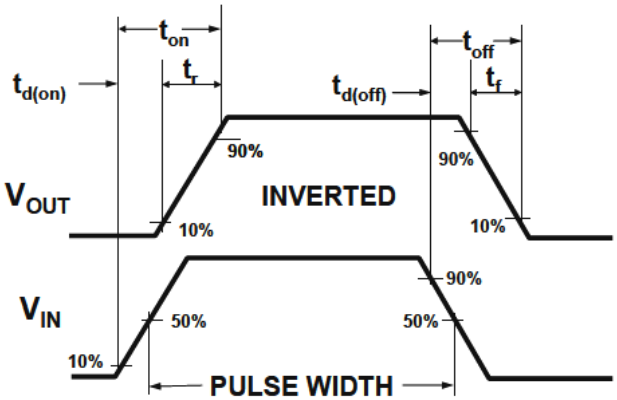


DETAILED INFORMATION

1. Switching Test Circuit

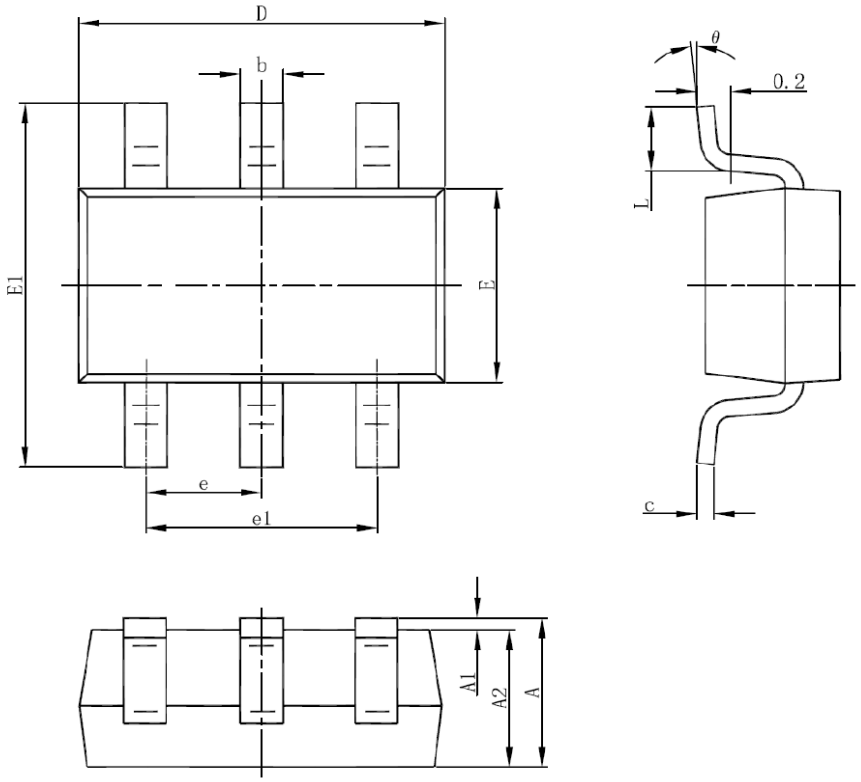


2. Switching Waveforms



PACKAGE INFORMATION

Dimension in SOT-26(Unit: mm)



Symbol	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(BSC)	
E1	1.800	2.000
L	0.300	0.600
θ	0°	8°

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.'s 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 servere 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.