



## DESCRIPTION

AM6401 is available in a SOT-26 package.

## ORDERING INFORMATION

Package Type	Part Number	
SOT-26	E6	AM6401E6R
		AM6401E6VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

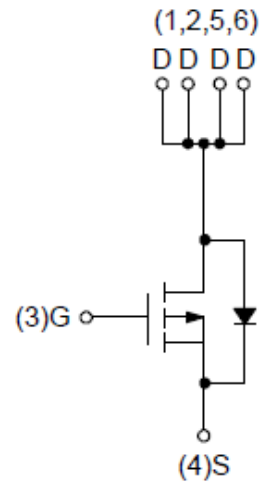
## FEATURES

- -30V/-5.1A,  
 $R_{DS(ON)} = 54m\Omega(\text{max.}) @ V_{GS} = -10V$   
 $R_{DS(ON)} = 65m\Omega(\text{max.}) @ V_{GS} = -4.5V$   
 $R_{DS(ON)} = 92m\Omega(\text{max.}) @ V_{GS} = -2.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Available in a SOT-26 package.

## APPLICATION

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

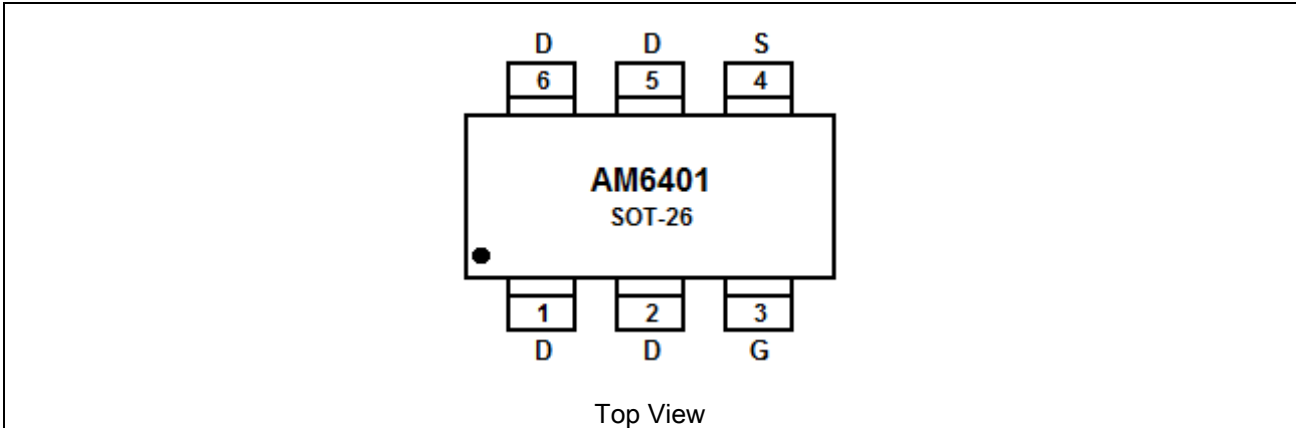
## PIN DESCRIPTION



P-Channel MOSFET



**PIN DESCRIPTION**



Top View

Pin #	Symbol	Function
1,2,5,6	D	Drain
3	G	Gate
4	S	Source



## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C, unless otherwise noted

V <sub>DSS</sub> , Drain-Source Voltage		-30V
V <sub>GSS</sub> , Gate-Source Voltage		±12V
I <sub>D</sub> <sup>NOTE1</sup> , Continuous Drain Current	T <sub>A</sub> =25°C	-5.1A
	T <sub>A</sub> =70°C	-4.1A
I <sub>DM</sub> <sup>NOTE1</sup> , 300µs Pulsed Drain Current	T <sub>A</sub> =25°C	-20.3A
	T <sub>A</sub> =70°C	-16.2A
I <sub>S</sub> <sup>NOTE1</sup> , Diode Continuous Forward Current		-1A
T <sub>J</sub> , Maximum Junction Temperature		150°C
T <sub>STG</sub> , Storage Temperature Range		-55°C~150°C
P <sub>D</sub> <sup>NOTE1</sup> , Maximum Power Dissipation	T <sub>A</sub> =25°C	2.1W
	T <sub>A</sub> =70°C	1.3W
R <sub>θJA</sub> <sup>NOTE1</sup> , Thermal Resistance-Junction to Ambient	t ≤ 10s	60°C/W
	Steady state	100°C/W

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.

NOTE1: Surface Mounted on 1in<sup>2</sup> pad area, t ≤ 10sec.



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V	-	-	-1	μA
		T <sub>J</sub> =85°C			-30	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =-250μA	-0.5	-0.9	-1.3	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±100	nA
Drain-Source On-state Resistance	R <sub>DS(ON)</sub> NOTE2	V <sub>GS</sub> =-10V, I <sub>DS</sub> =-5.1A	-	45	54	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>DS</sub> =-4.1A	-	52	65	
		V <sub>GS</sub> =-2.5V, I <sub>DS</sub> =-2.7A	-	68	92	
Diode Forward Voltage	V <sub>SD</sub> NOTE2	I <sub>SD</sub> =-1A, V <sub>GS</sub> =0V	-	-0.7	-1	V
<b>Gate Charge Characteristics</b> NOTE3						
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>DS</sub> =-5.1A	-	13.6	-	nC
Gate-Source Charge	Q <sub>GS</sub>		-	1.2	-	
Gate-Drain Charge	Q <sub>GD</sub>		-	2.0	-	
<b>Dynamic Characteristics</b> NOTE3						
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	-	3.6	-	Ω
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, Frequency=1.0MHz	-	573	-	pF
Output Capacitance	C <sub>OSS</sub>		-	74	-	
Reverse Transfer Capacitance	C <sub>RSS</sub>		-	53	-	
Turn-on Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =-15V, R <sub>L</sub> =10Ω I <sub>DS</sub> =-1A, V <sub>GEN</sub> =-10V, R <sub>G</sub> =6Ω	-	6.9	-	ns
Turn-on Rise Time	t <sub>R</sub>		-	12.3	-	
Turn-off Delay Time	t <sub>D(OFF)</sub>		-	25	-	
Turn-off Fall Time	t <sub>F</sub>		-	13	-	
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-5.1A, dI <sub>SD</sub> /dt=100A/μs	-	16	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	11	-	nC

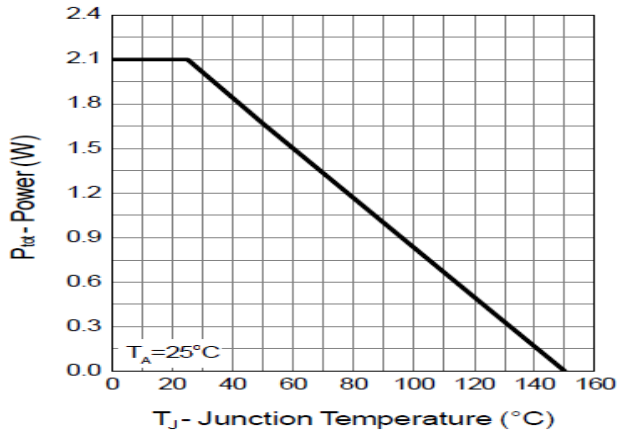
NOTE2: Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%.

NOTE3: Guaranteed by design, not subject to production testing.

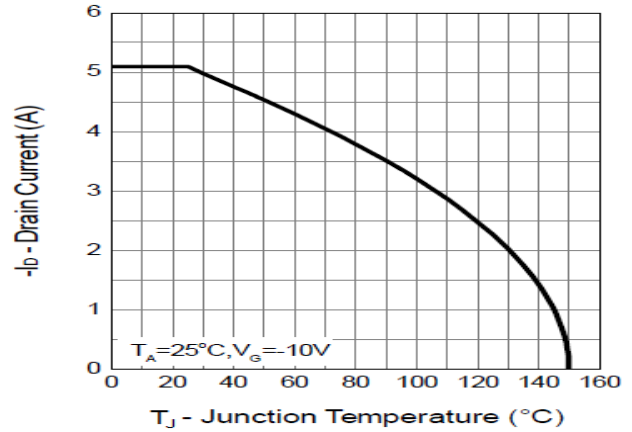


## TYPICAL CHARACTERISTICS

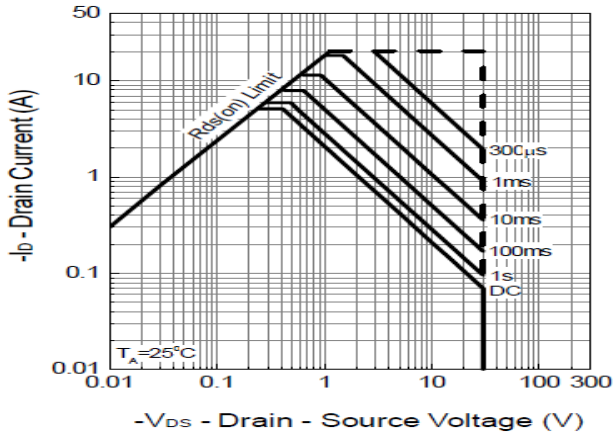
### 1. Power Dissipation



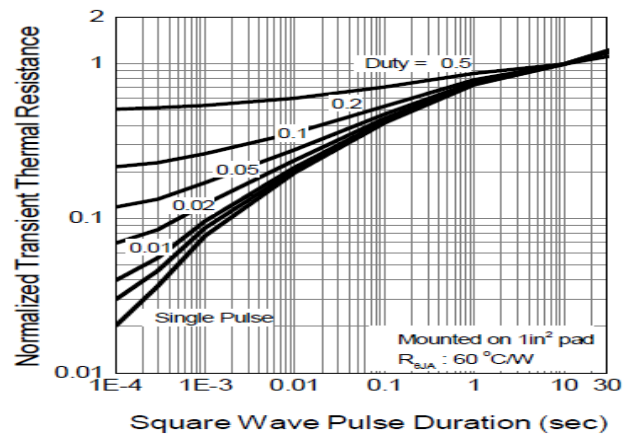
### 2. Drain Current



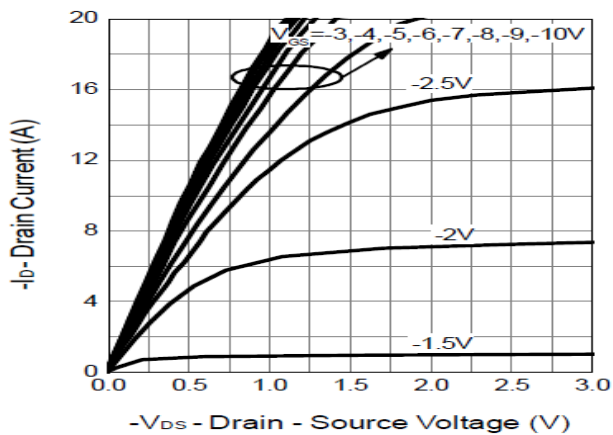
### 3. Safe Operation Area



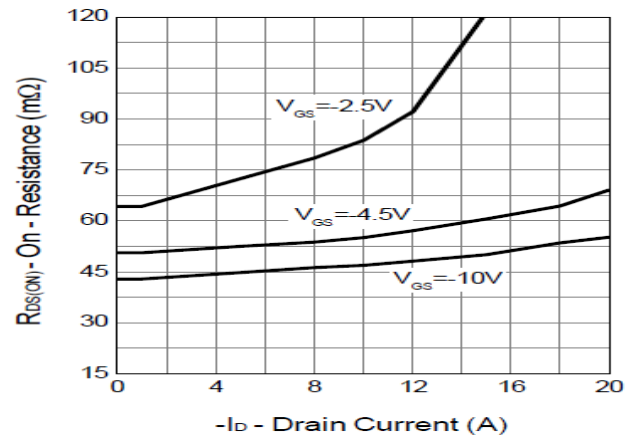
### 4. Thermal Transient Impedance



### 5. Output Characteristics

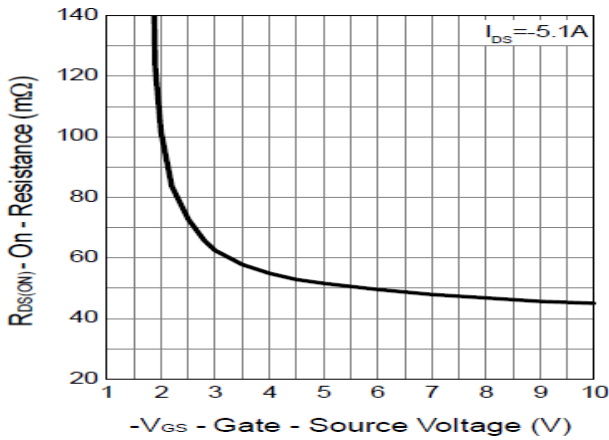


### 6. Drain-Source On Resistance

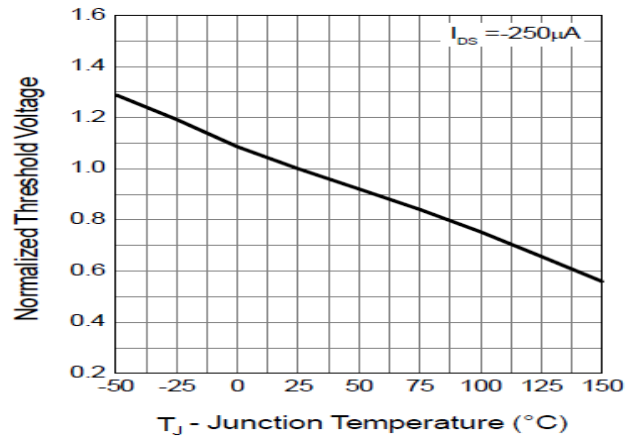




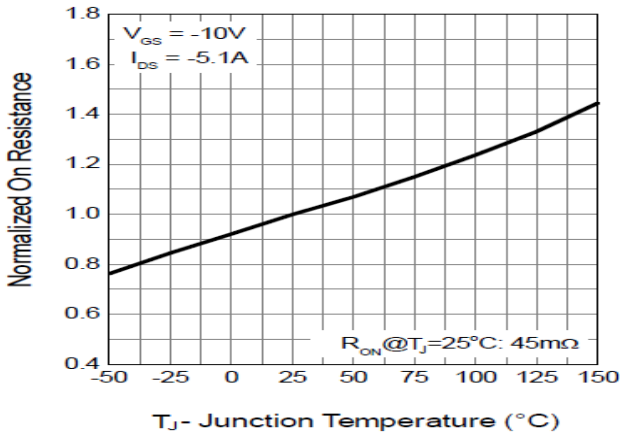
7. Gate-Source On Resistance



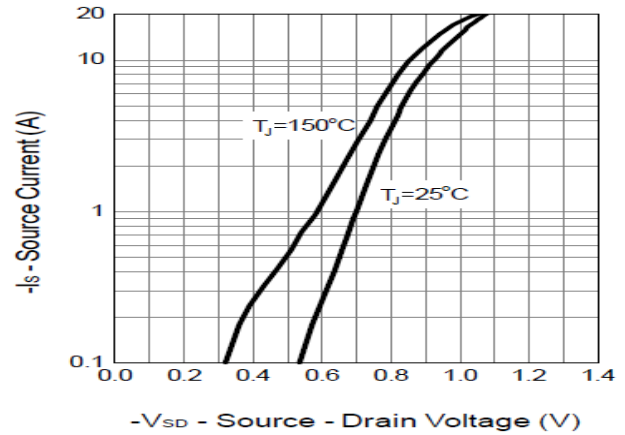
8. Gate Threshold Voltage



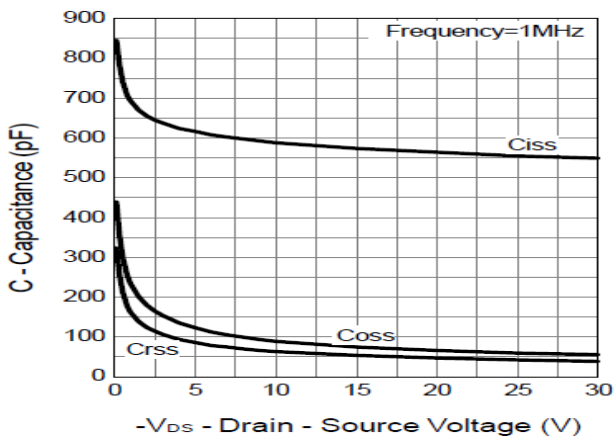
9. Drain-Source On Resistance



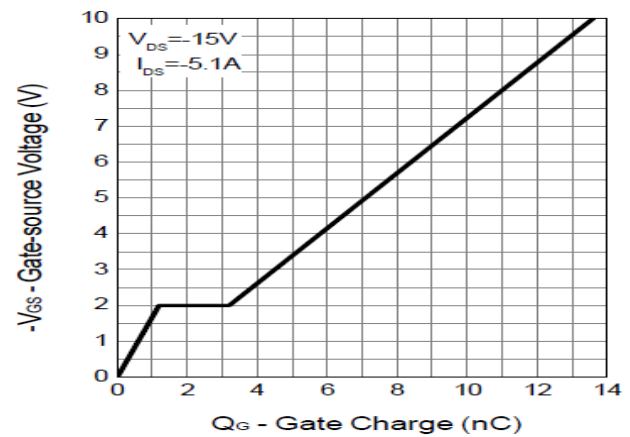
10. Source-Drain Diode Forward



11. Capacitance



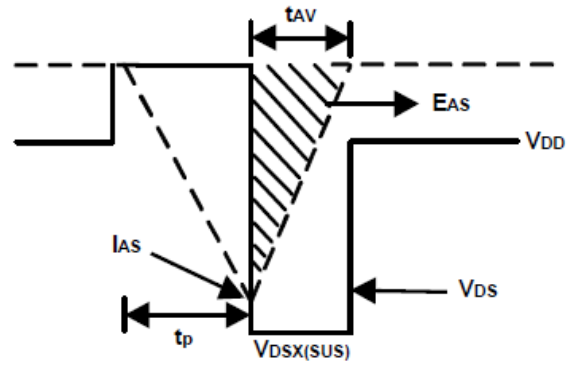
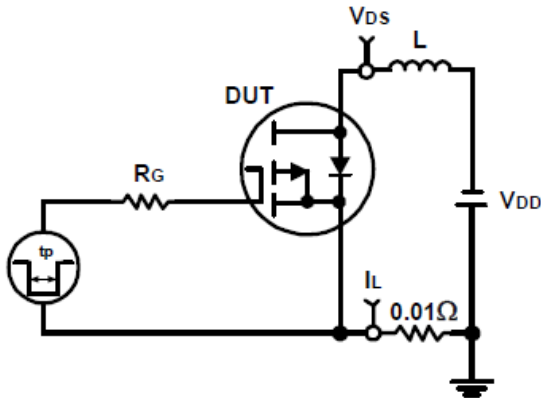
12. Gate Charge



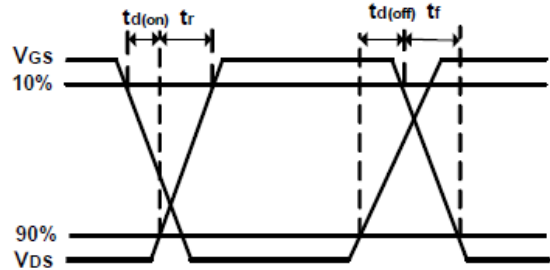
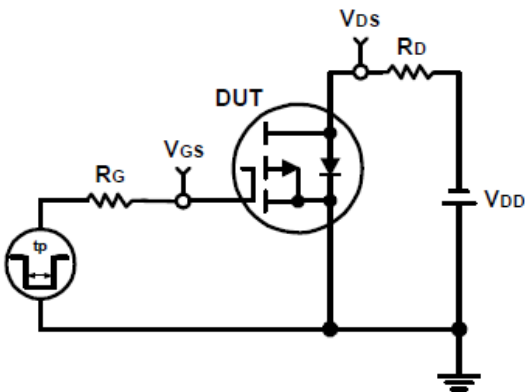


## DETAILED INFORMATION

### Avalanche Test Circuit and Waveforms



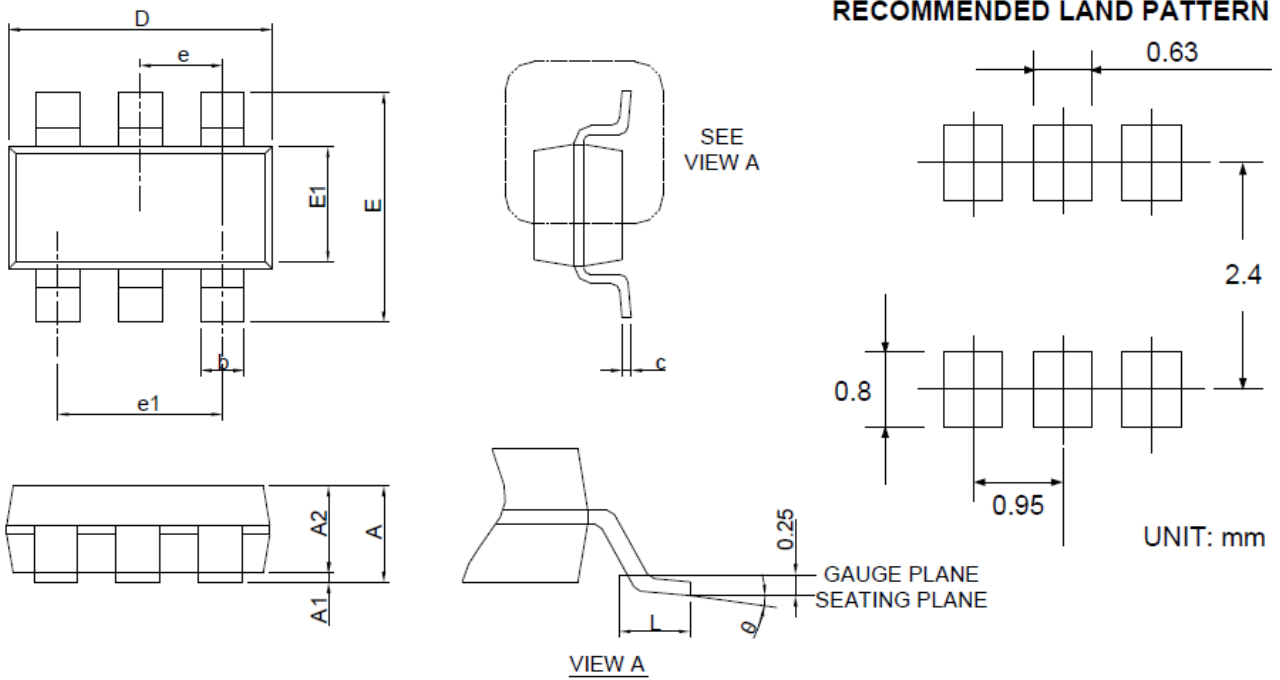
### Switching Time Test Circuit and Waveforms





**PACKAGE INFORMATION**

Dimension in SOT-26 Package (Unit: mm)



SYMBOL	MIN	MAX
A	-	1.250
A1	0.000	0.150
A2	0.900	1.300
b	0.300	0.500
c	0.080	0.220
D	2.700	3.100
E	2.600	3.000
E1	1.400	1.800
e	0.950(BSC)	
e1	1.900(BSC)	
L	0.300	0.600
$\theta$	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 severe 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.