

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	SIUD406ED-T1-GE3
Manufacturer:	Vishay Siliconix
Package:	Please confirm with sales
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/vishay-siliconix/siud406ed-t1-ge3.html>

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Contact Information

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New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

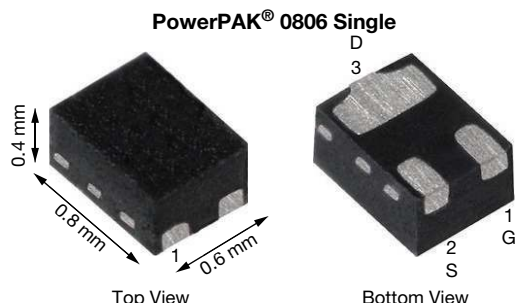
Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

N-Channel 30 V (D-S) MOSFET



Marking code: J

PRODUCT SUMMARY	
V_{DS} (V)	30
$R_{DS(on)}$ max. (Ω) at $V_{GS} = 4.5$ V	1.46
$R_{DS(on)}$ max. (Ω) at $V_{GS} = 2.5$ V	1.66
$R_{DS(on)}$ max. (Ω) at $V_{GS} = 1.8$ V	1.85
Q_g typ. (nC)	0.4
I_D (A)	0.5 ^{a, f}
Configuration	Single

ORDERING INFORMATION	
Package	PowerPAK 0806
Lead (Pb)-free and halogen-free	SiUD406ED-T1-GE3

Note

- The lead finish is NiPdAu and classed as E4 finish

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)				
PARAMETER	SYMBOL	LIMIT	UNIT	
Drain-source voltage	V_{DS}	30	V	
Gate-source voltage	V_{GS}	± 8		
Continuous drain current ($T_J = 150$ °C)	$T_A = 25$ °C	0.5 ^{a, f}	A	
	$T_A = 70$ °C	0.5 ^a		
	$T_A = 25$ °C	0.37 ^b		
	$T_A = 70$ °C	0.29 ^b		
Pulsed drain current ($t = 100$ μ s)	I_{DM}	0.8	A	
Continuous source-drain diode current	$T_A = 25$ °C	0.5 ^{a, f}		
	$T_A = 25$ °C	0.31 ^b	W	
Maximum power dissipation	$T_A = 25$ °C	1.25 ^a		
	$T_A = 70$ °C	0.8 ^a		
	$T_A = 25$ °C	0.37 ^b		
	$T_A = 70$ °C	0.24 ^b		
Operating junction and storage temperature range	T_J, T_{stg}	-55 to +150	°C	
Soldering recommendations (peak temperature) ^c		260		

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient ^{a, d}	$t \leq 5$ s	R_{thJA}	80	100	°C/W
Maximum junction-to-ambient ^{b, e}	$t \leq 5$ s	R_{thJA}	265	335	

Notes

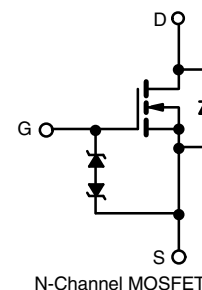
- Surface mounted on 1" x 1" FR4 board with full copper, $t = 5$ s
- Surface mounted on 1" x 1" FR4 board with minimum copper, $t = 5$ s
- Refer to IPC / JEDEC® (J-STD-020), no manual or hand soldering
- Maximum under steady state conditions is 135 °C/W
- Maximum under steady state conditions is 400 °C/W
- Package limited

FEATURES

- TrenchFET® power MOSFET
- Ultra small 0.8 mm x 0.6 mm outline
- Ultra thin 0.4 mm max. height
- Typical ESD protection 1000 V (HBM)
- 100 % R_g tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Load switch
- High speed switching
- DC/DC converters
- Battery-operated and mobile devices


RoHS
COMPLIANT
HALOGEN
FREE

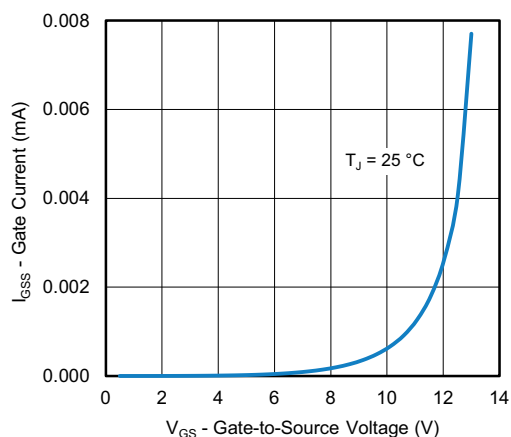
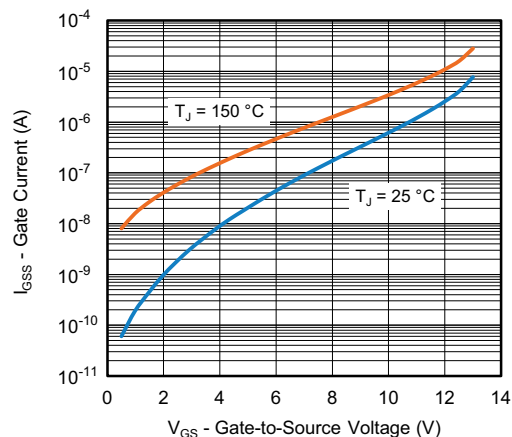
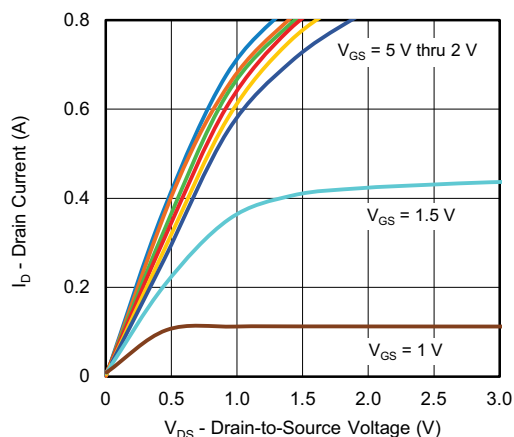
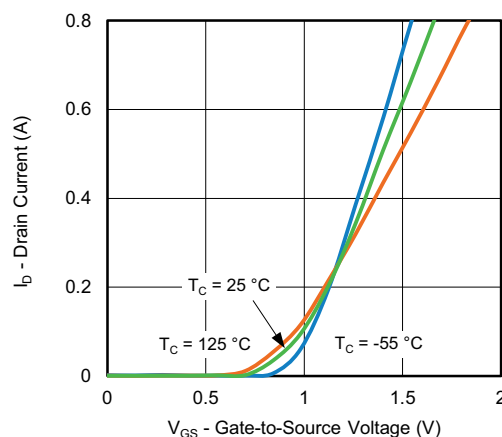
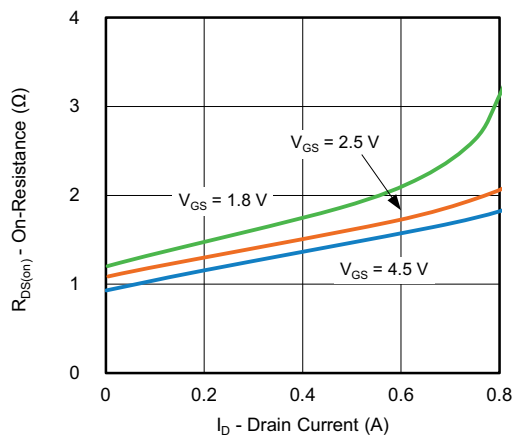
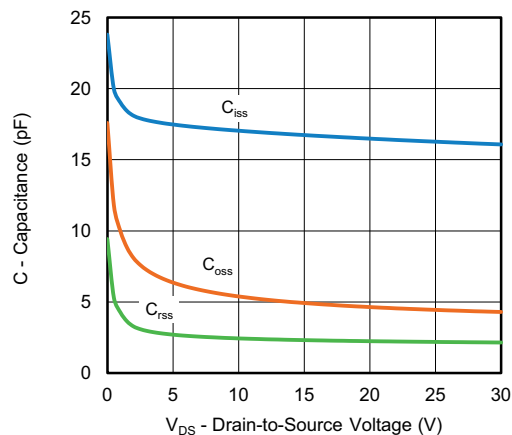


SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	30	-	-	V
V _{DS} temperature coefficient	ΔV _{DS} /T _J	I _D = 250 μA	-	28	-	mV/°C
V _{GS(th)} temperature coefficient	ΔV _{GS(th)} /T _J		-	-1.5	-	
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.4	-	1.1	V
Gate-source leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 4.5 V	-	-	± 0.5	μA
		V _{DS} = 0 V, V _{GS} = ± 8 V	-	-	10	
Zero gate voltage drain current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V	-	-	1	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C	-	-	10	
On-state drain current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 4.5 V	0.5	-	-	A
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.2 A	-	1.17	1.46	Ω
		V _{GS} = 2.5 V, I _D = 0.1 A	-	1.24	1.66	
		V _{GS} = 1.8 V, I _D = 0.1 A	-	1.37	1.85	
Forward transconductance ^a	g _{fs}	V _{DS} = 5 V, I _D = 0.4 A	-	1.2	-	S
Dynamic ^b						
Input capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz	-	17	-	pF
Output capacitance	C _{oss}		-	5	-	
Reverse transfer capacitance	C _{rss}		-	2.5	-	
Total gate charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 0.2 A	-	0.4	0.6	nC
Gate-source charge	Q _{gs}	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 0.2 A	-	0.04	-	
Gate-drain charge	Q _{gd}		-	0.1	-	
Gate resistance	R _g	f = 1 MHz	3	15	30	Ω
Turn-on delay time	t _{d(on)}	V _{DD} = 15 V, R _L = 75 Ω, I _D ≅ 0.2 A, V _{GEN} = 4.5 V, R _g = 1 Ω	-	5	10	ns
Rise time	t _r		-	5	10	
Turn-off delay time	t _{d(off)}		-	20	40	
Fall time	t _f		-	5	10	
Turn-on delay time	t _{d(on)}	V _{DD} = 15 V, R _L = 75 Ω, I _D ≅ 0.2 A, V _{GEN} = 8 V, R _g = 1 Ω	-	5	10	
Rise time	t _r		-	5	10	
Turn-off delay time	t _{d(off)}		-	7	15	
Fall time	t _f		-	5	10	
Drain-Source Body Diode Characteristics						
Continuous source-drain diode current	I _S	T _A = 25 °C	-	-	0.5 ^c	A
Pulse diode forward current	I _{SM}		-	-	0.8	
Body diode voltage	V _{SD}	I _S = 0.2 A, V _{GS} = 0 V	-	0.88	1.2	V
Body diode reverse recovery time	t _{rr}	I _F = 0.2 A, di/dt = 100 A/μs, T _J = 25 °C	-	10	20	ns
Body diode reverse recovery charge	Q _{rr}		-	3	6	nC
Reverse recovery fall time	t _a		-	5	-	ns
Reverse recovery rise time	t _b		-	5	-	

Notes

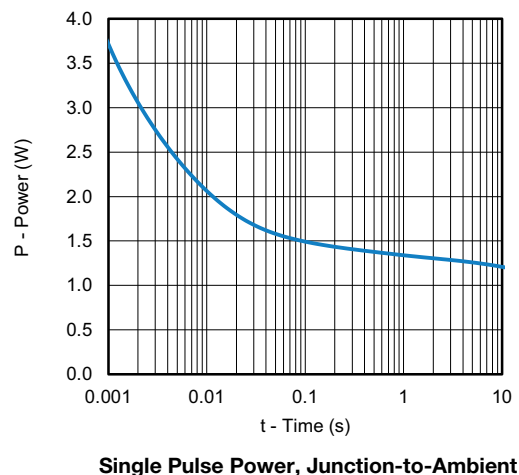
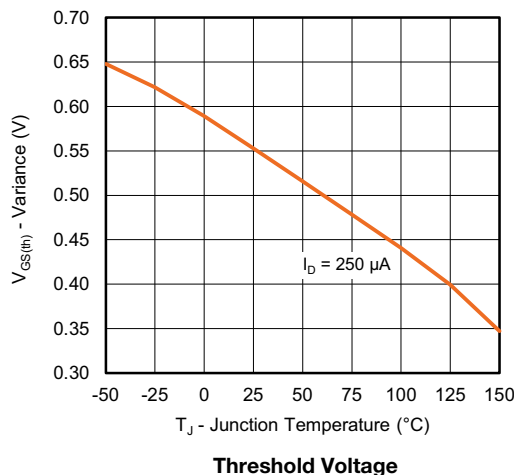
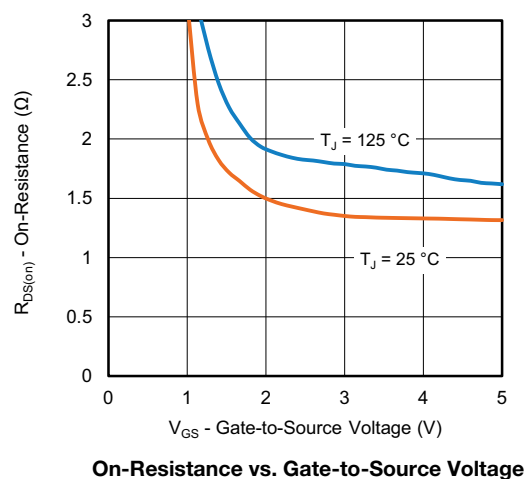
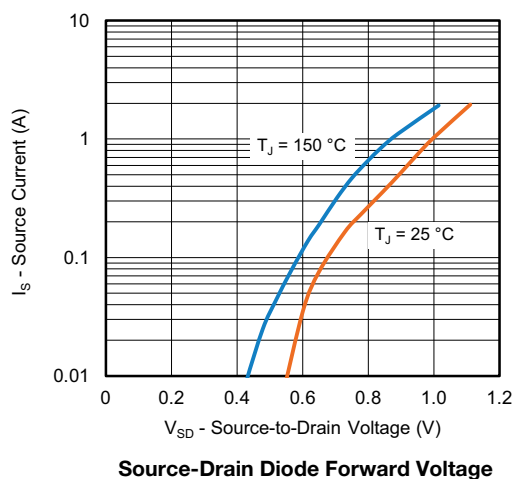
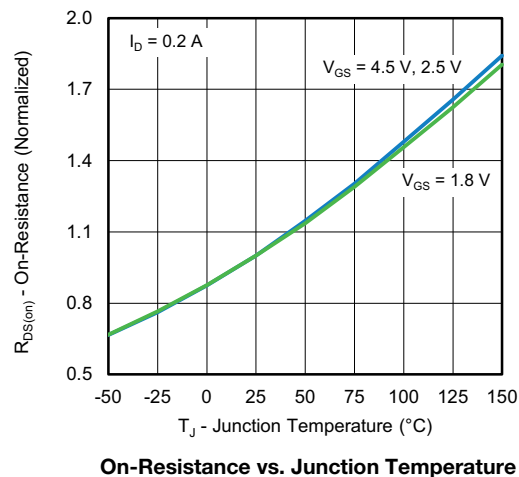
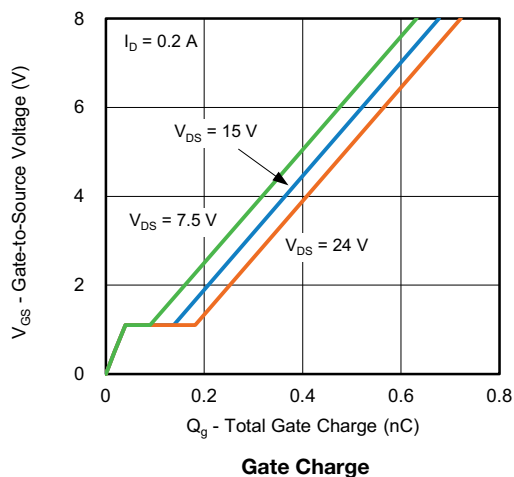
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
b. Guaranteed by design, not subject to production testing
c. Surface mounted on 1" x 1" FR4 board with full copper, t = 5 s

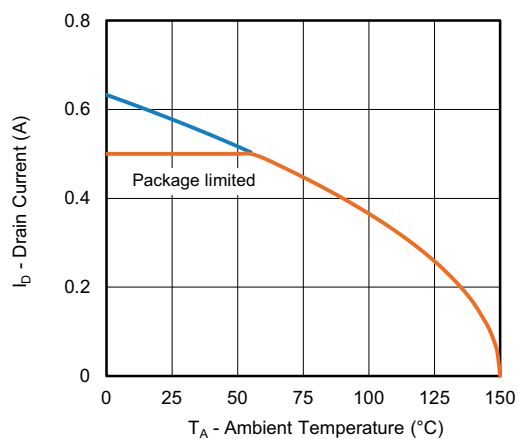
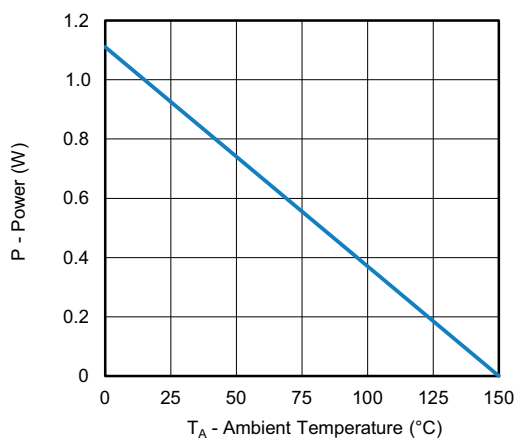
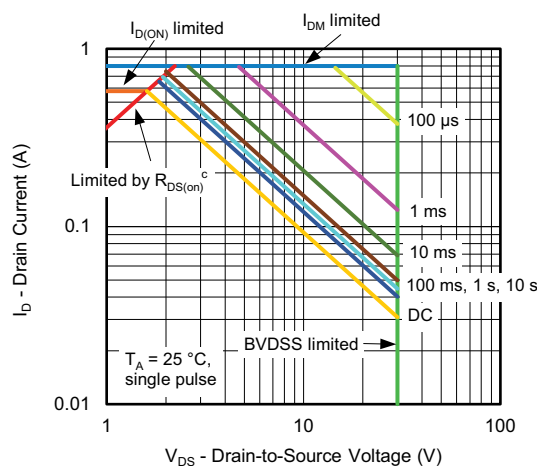
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Gate-Current vs. Gate-Source Voltage

Gate-Current vs. Gate-Source Voltage

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current and Gate Voltage

Capacitance



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

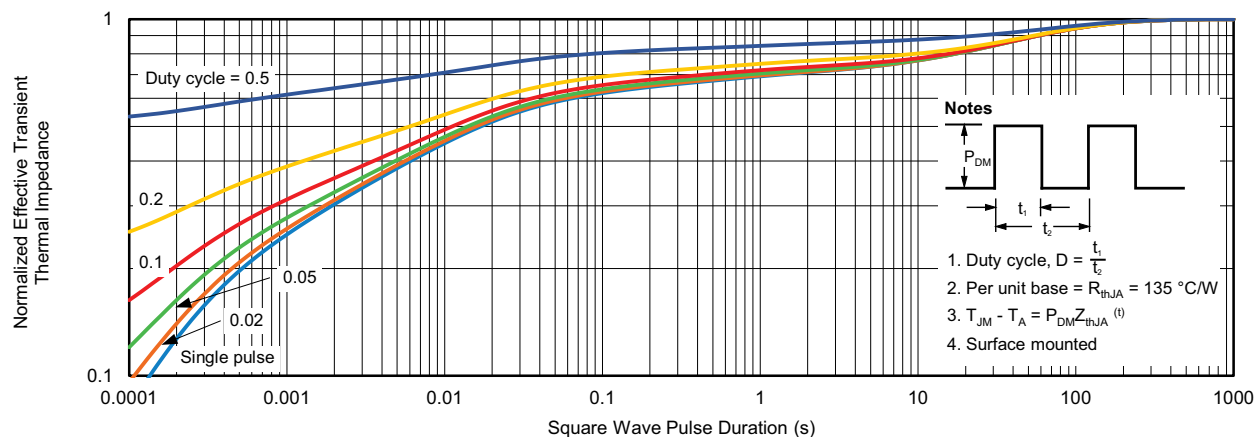


TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Current Derating a, b

Power Derating, Junction-to-Ambient a

Safe Operating Area, Junction-to-Ambient
Notes

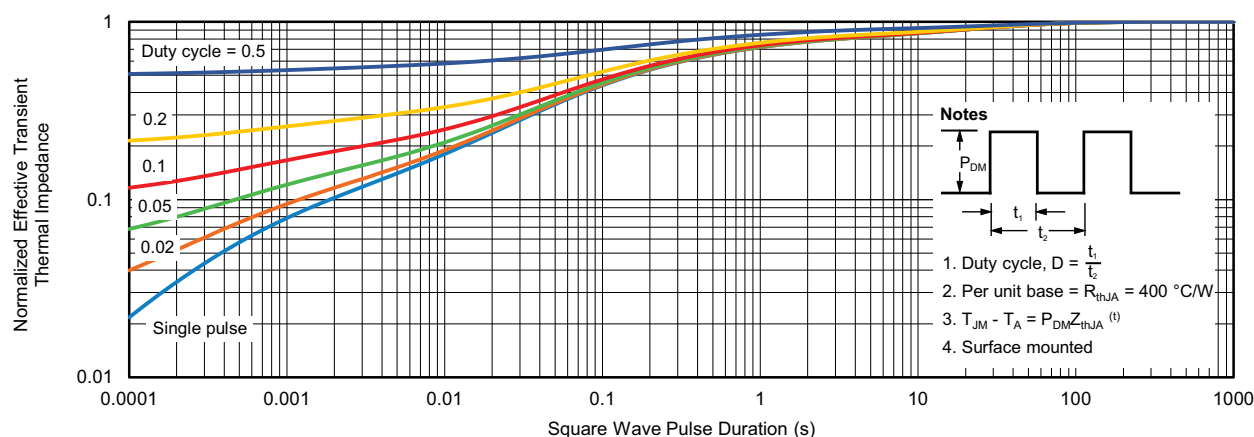
- When mounted on 1" x 1" FR4 with full copper
- The power dissipation P_D is based on $T_J \text{ max.} = 150^\circ\text{C}$, using junction-to-ambient thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit
- $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



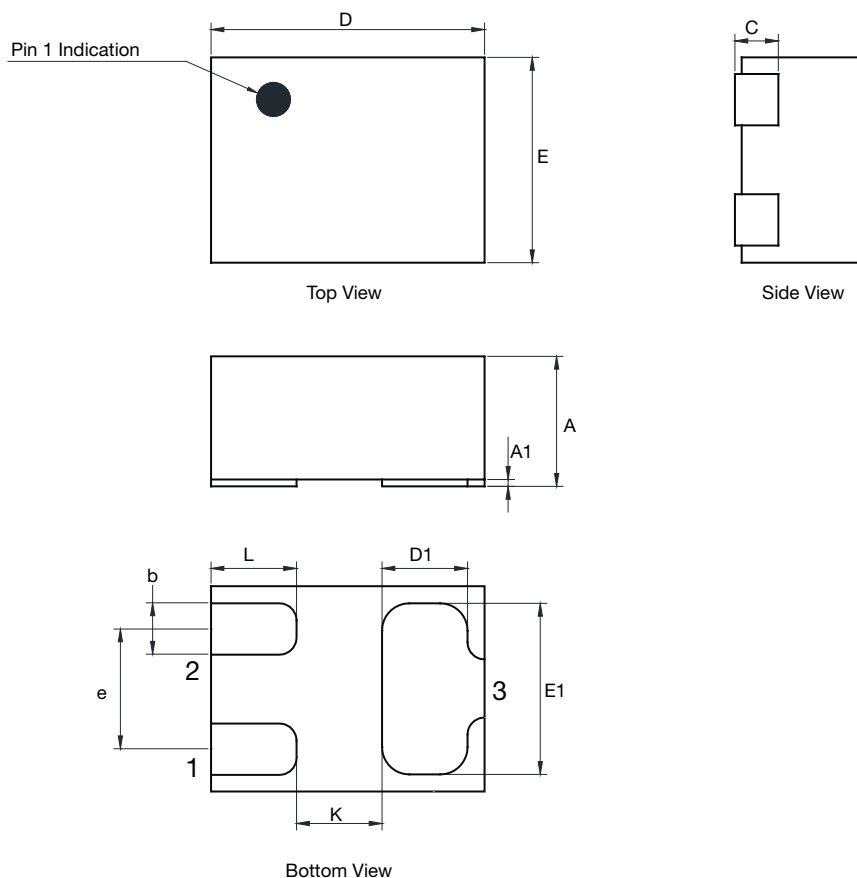
Normalized Thermal Transient Impedance, Junction-to-Ambient (on 1" x 1" FR4 board with maximum copper)



Normalized Thermal Transient Impedance, Junction-to-Ambient (on 1" x 1" FR4 board with minimum copper)

Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package / tape drawings, part marking, and reliability data, see www.vishay.com/ppg?75906.

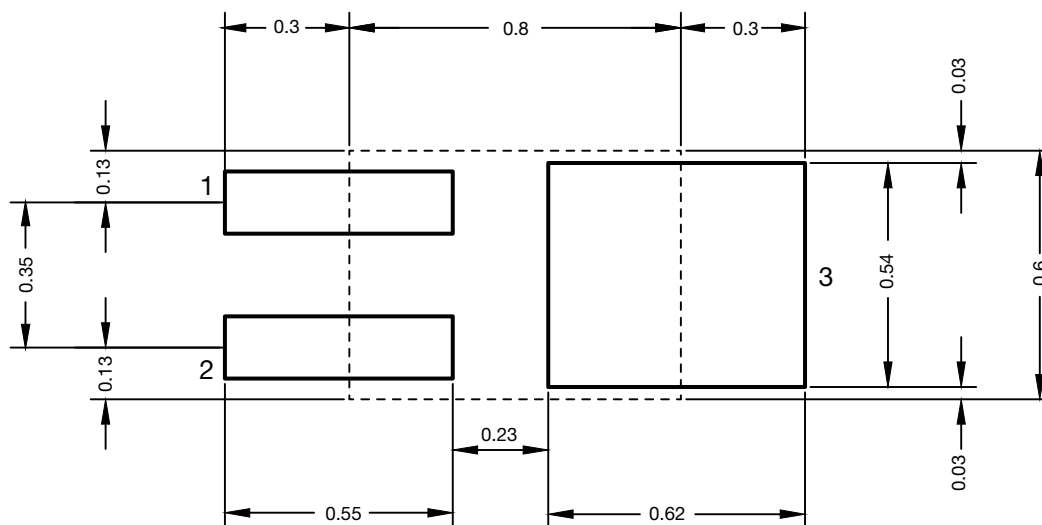
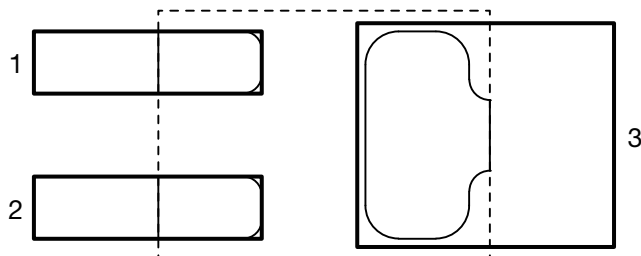
Case Outline for PowerPAK 0.8 mm x 0.6 mm



DIM.	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.350	0.380	0.400	0.0138	0.0150	0.0157
A1	0	-	0.020	0	-	0.0008
b	0.120	0.150	0.180	0.0047	0.0059	0.0071
C	0.119	0.127	0.135	0.0047	0.0050	0.0053
D	0.750	0.800	0.850	0.0295	0.0315	0.0335
D1	0.200	0.250	0.300	0.0078	0.0098	0.0118
E	0.550	0.600	0.650	0.0217	0.0236	0.0256
E1	0.450	0.500	0.550	0.0177	0.0197	0.0217
e	0.300	0.350	0.400	0.0118	0.0138	0.0158
K	0.150	0.250	0.350	0.0058	0.0098	0.0138
L	0.200	0.250	0.300	0.0078	0.0098	0.0118

ECN: C13-1574-Rev. A, 23-Dec-13
DWG: 6020

Recommended Land Pattern PowerPAK® 0806





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