

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Vishay/Siliconix](#)

[SUD50N03-06AP-E3](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



New Product

SUD50N03-06AP
Vishay Siliconix

N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

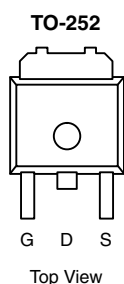
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^{a, e}	Q_g (Typ)
30	0.0057 @ $V_{GS} = 10$ V	90	30
	0.0078 @ $V_{GS} = 4.5$ V	77	

FEATURES

- TrenchFET® Power MOSFET
- Optimized for Low-Side Synchronous Rectifier Operation
- 100% R_g Tested

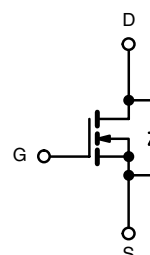
APPLICATIONS

- DC/DC Converters
- Synchronous Rectifiers



Drain Connected to Tab

Ordering Information: SUD50N03-06AP—E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	90 ^{a, e}	A
	$T_C = 70^\circ\text{C}$		75 ^{a, e}	
	$T_A = 25^\circ\text{C}$		30 ^{b, c}	
	$T_A = 70^\circ\text{C}$		25 ^{b, c}	
Pulsed Drain Current		I_{DM}	100	
Continuous Source-Drain Diode Current	$T_C = 25^\circ\text{C}$	I_S	55 ^{a, e}	
	$T_A = 25^\circ\text{C}$		6.7 ^{b, c}	
Avalanche Current Pulse	$L = 0.1$ mH	I_{AS}	45	mJ
Single Pulse Avalanche Energy		E_{AS}	101	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	83	W
	$T_C = 70^\circ\text{C}$		58	
	$T_A = 25^\circ\text{C}$		10 ^{b, c}	
	$T_A = 70^\circ\text{C}$		7 ^{b, c}	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	$t \leq 10$ sec	R_{thJA}	12	15	$^\circ\text{C/W}$
Maximum Junction-to-Case	Steady State	R_{thJC}	1.5	1.8	

Notes:

- Based on $T_C = 25^\circ\text{C}$.
- Surface mounted on 1" x 1" FR4 board.
- $t = 10$ sec
- Maximum under steady state conditions is 50°C/W .
- Calculated based on maximum junction temperature. Package limitation current is 50 A.



SUD50N03-06AP

Vishay Siliconix

New Product

SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	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		25		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			– 6.3		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.2		2.4	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		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} = 10 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.0046	0.0057	Ω
		V _{GS} = 4.5 V, I _D = 20 A		0.0062	0.0078	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A		70		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		3800		pF
Output Capacitance	C _{oss}			615		
Reverse Transfer Capacitance	C _{rss}			305		
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 30 A		62	95	nC
		V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 25 A		30	45	
Gate-Source Charge	Q _{gs}			11		
Gate-Drain Charge	Q _{gd}			9		
Gate Resistance	R _g	f = 1 MHz		0.9	1.4	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 0.5 Ω I _D ≅ 30 A, V _{GEN} = 10 V, R _g = 1 Ω		12	18	ns
Rise Time	t _r			10	15	
Turn-Off Delay Time	t _{d(off)}			30	45	
Fall Time	t _f			8	12	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 0.6 Ω I _D ≅ 25 A, V _{GEN} = 4.5 V, R _g = 1 Ω		26	40	
Rise Time	t _r			230	345	
Turn-Off Delay Time	t _{d(off)}			25	40	
Fall Time	t _f			9	14	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			55°	A
Pulse Diode Forward Current ^a	I _{SM}				100	
Body Diode Voltage	V _{SD}	I _S = 6.7 A		0.9	1.5	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 6.7 A, di/dt = 100 A/μs, T _J = 25 °C		65	100	ns
Body Diode Reverse Recovery Charge	Q _{rr}			38	60	nC
Reverse Recovery Fall Time	t _a			50		ns
Reverse Recovery Rise Time	t _b			15		

Notes

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Calculated based on maximum junction temperature. Package limitation current is 50 A.

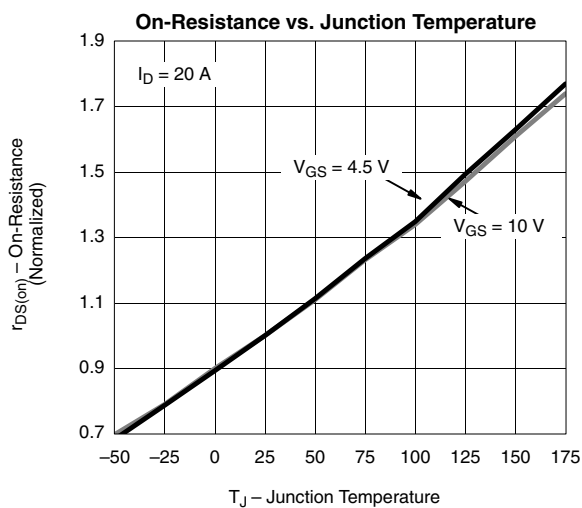
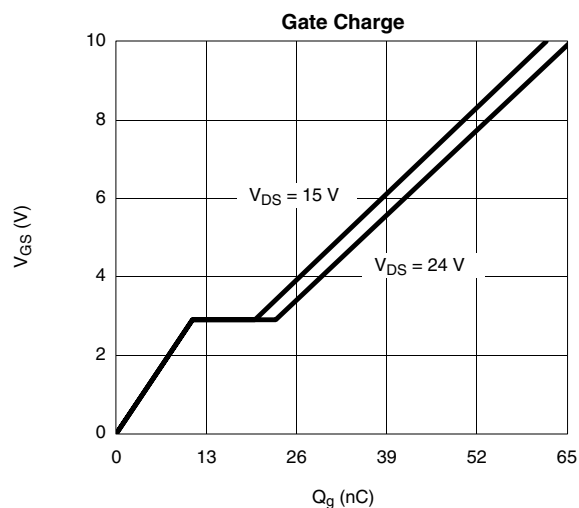
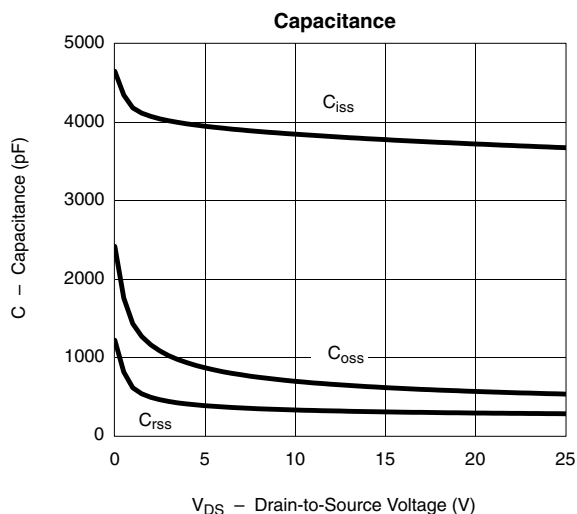
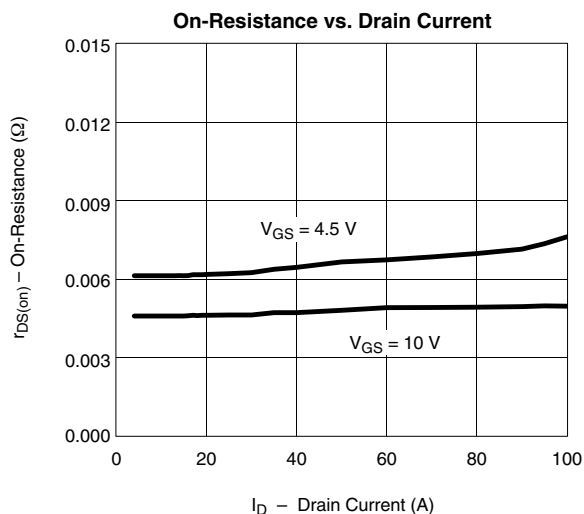
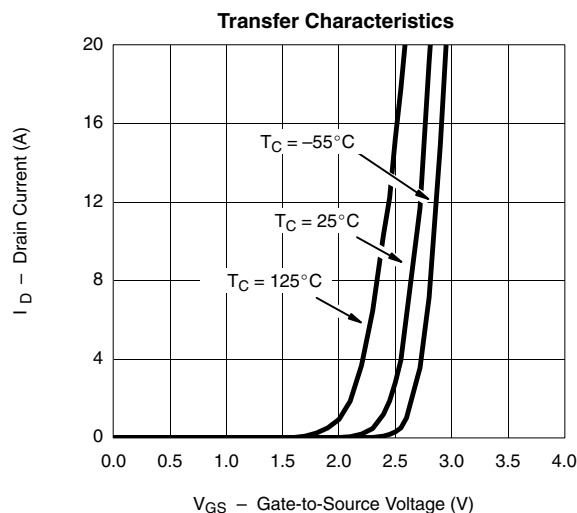
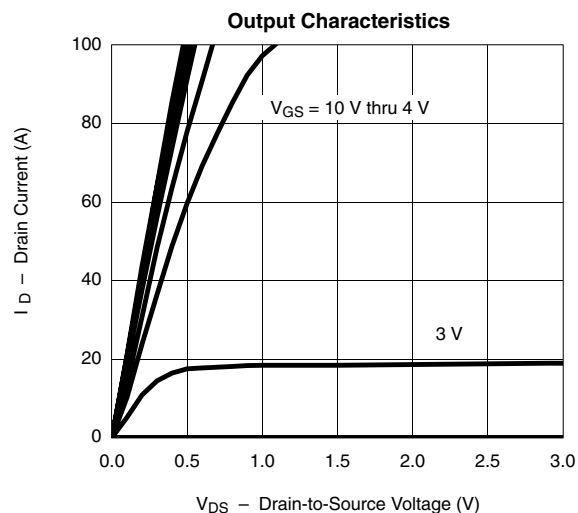
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



New Product

SUD50N03-06AP
Vishay Siliconix

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



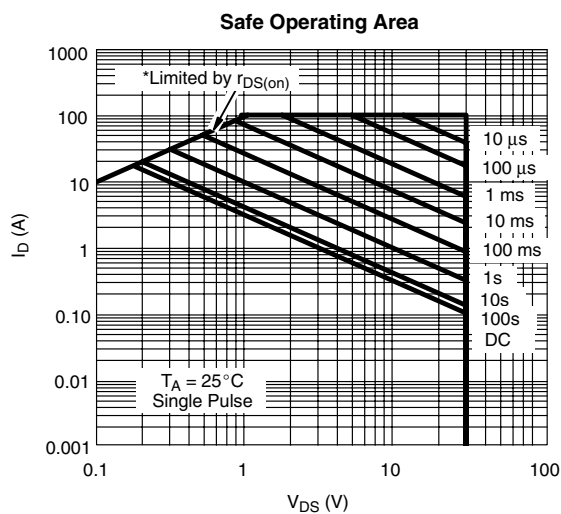
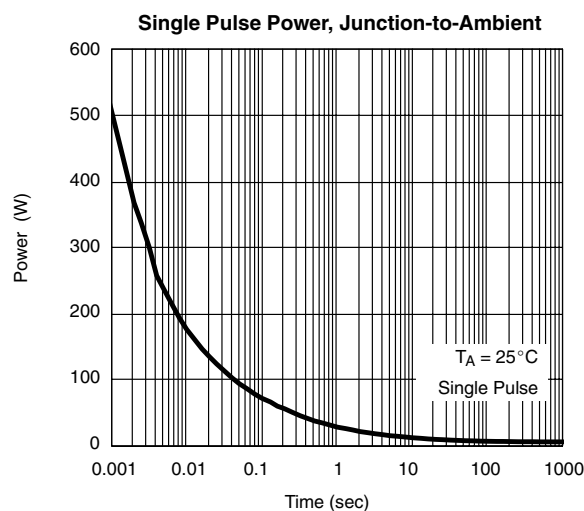
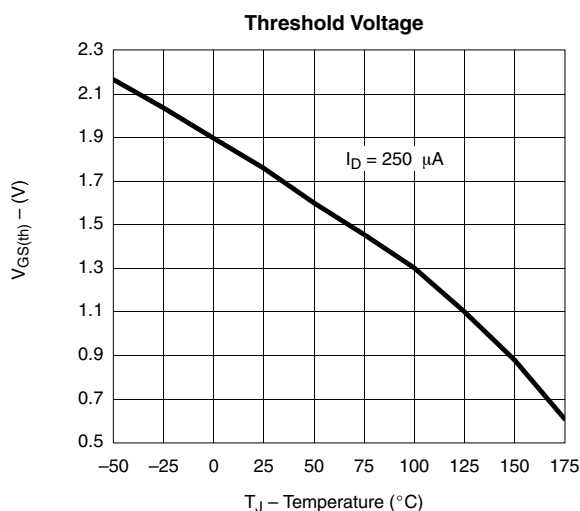
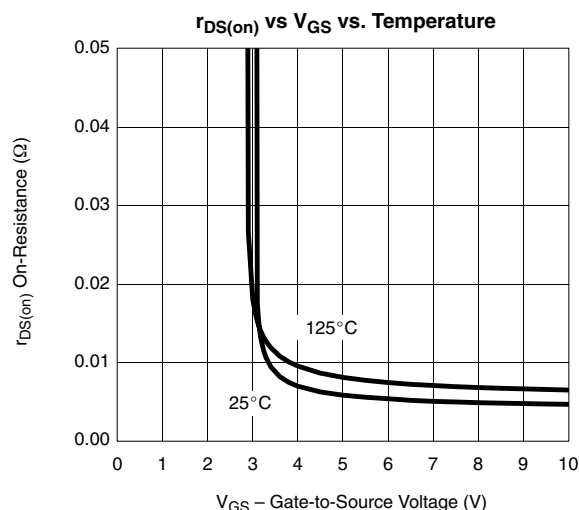
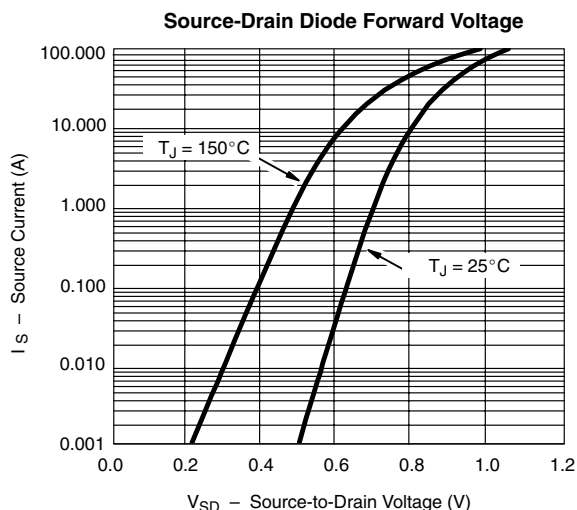


SUD50N03-06AP

Vishay Siliconix

New Product

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



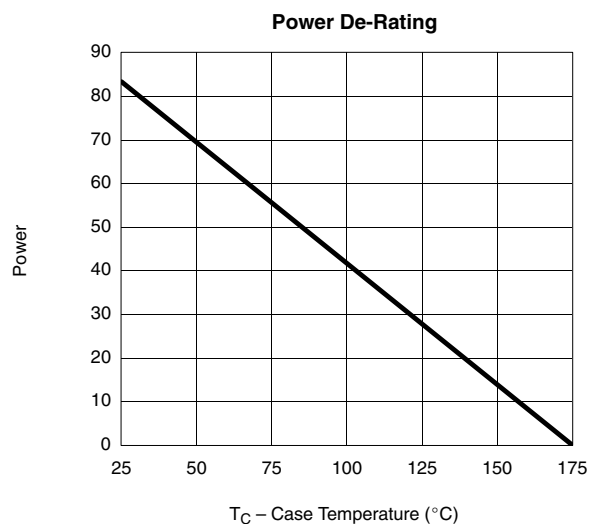
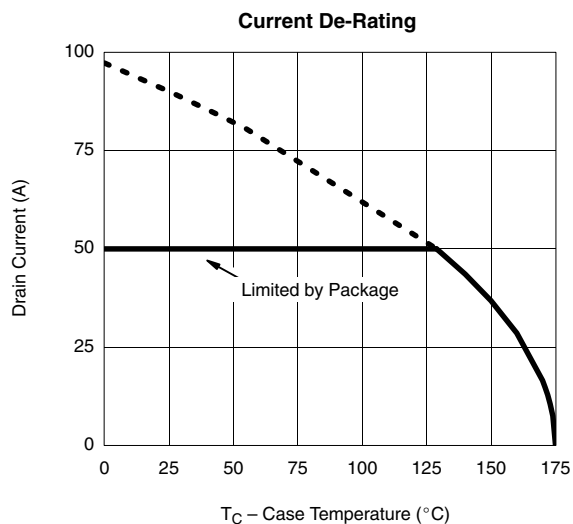
* $V_{GS} >$ minimum V_{GS} at which $r_{DS(on)}$ is specified



New Product

SUD50N03-06AP
Vishay Siliconix

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



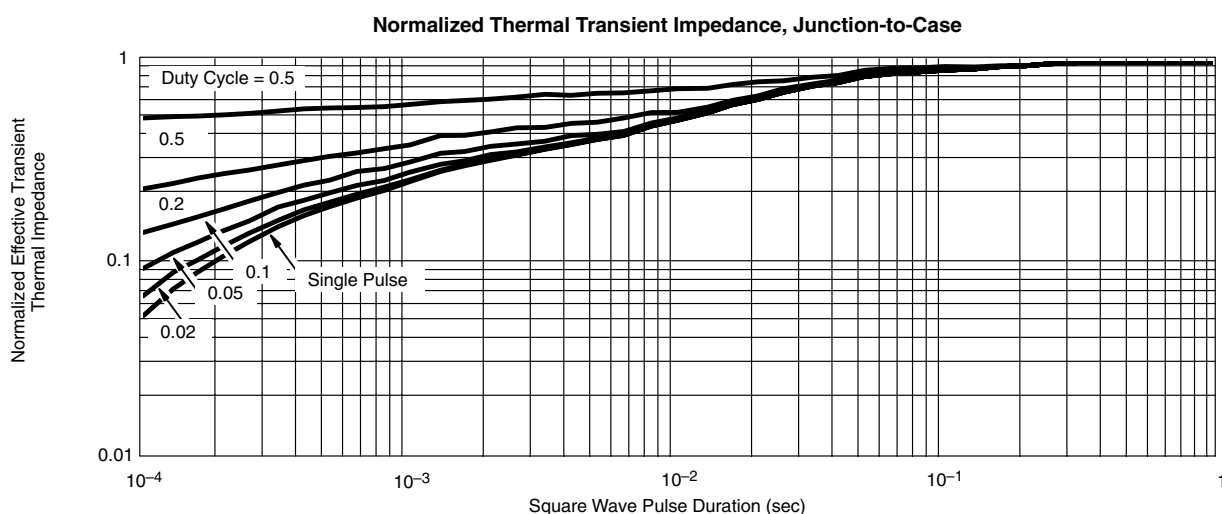
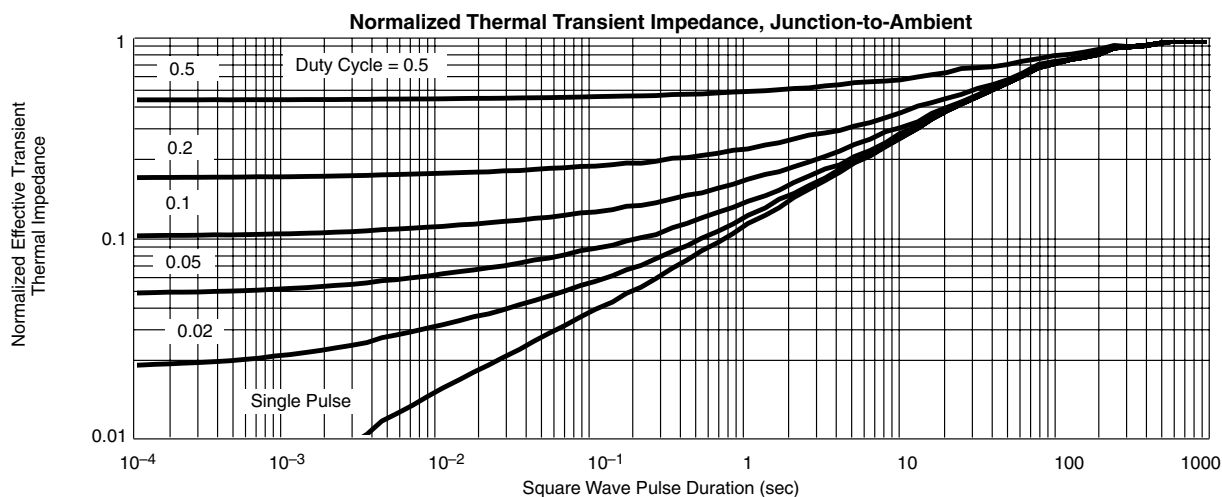


SUD50N03-06AP

Vishay Siliconix

New Product

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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 <http://www.vishay.com/ppg?73540>.



Legal Disclaimer Notice

Vishay

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.