



勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
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 Http://www.100y.com.tw

Si5853DC
 Vishay Siliconix

P-Channel 1.8 V (G-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
- 20	0.110 at $V_{GS} = - 4.5$ V	- 3.6
	0.160 at $V_{GS} = - 2.5$ V	- 3.0
	0.240 at $V_{GS} = - 1.8$ V	- 2.4

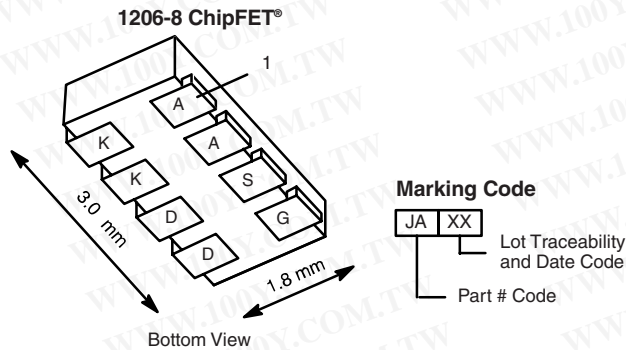
SCHOTTKY PRODUCT SUMMARY		
V_{KA} (V)	V_f (V) Diode Forward Voltage	I_F (A)
20	0.48 V at 0.5 A	1.0

FEATURES

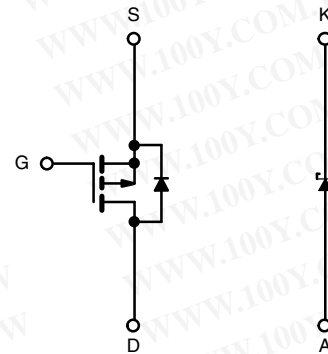
- Halogen-free According to IEC 61249-2-21 Definition
- LITTLE FOOT® Plus
- Compliant to RoHS Directive 2002/95/EC



RoHS
 COMPLIANT
HALOGEN
FREE
 Available



Ordering Information: Si5853DC-T1-E3 (Lead (Pb)-free)
 Si5853DC-T1-GE3 (Lead (Pb)-free and Halogen-free)



ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted				
Parameter	Symbol	5 s	Steady State	Unit
Drain-Source Voltage (MOSFET and Schottky)	V_{DS}		- 20	V
Reverse Voltage (Schottky)	V_{KA}		20	V
Gate-Source Voltage (MOSFET)	V_{GS}	± 8	± 8	V
Continuous Drain Current ($T_J = 150$ °C) (MOSFET) ^a	I_D	$T_A = 25$ °C	- 3.6	- 2.7
		$T_A = 85$ °C	- 2.6	- 1.9
Pulsed Drain Current (MOSFET)	I_{DM}		- 10	A
Continuous Source Current (MOSFET Diode Conduction) ^a	I_S	- 1.8	- 0.9	A
Average Forward Current (Schottky)	I_F		1.0	A
Pulsed Forward Current (Schottky)	I_{FM}		7	A
Maximum Power Dissipation (MOSFET) ^a	P_D	$T_A = 25$ °C	2.1	1.1
		$T_A = 85$ °C	1.1	0.6
Maximum Power Dissipation (Schottky) ^a	P_D	$T_A = 25$ °C	1.3	0.96
		$T_A = 85$ °C	0.68	0.59
Operating Junction and Storage Temperature Range	T_J, T_{stg}		- 55 to 150	°C
Soldering Recommendations (Peak Temperature) ^{b, c}			260	°C

Notes:

- Surface mounted on 1" x 1" FR4 board.
- See reliability manual for profile. The ChipFET is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.

THERMAL RESISTANCE RATINGS

Parameter	Device	Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^a	t ≤ 5 s	MOSFET	50	60	°C/W
		Schottky	77	95	
	Steady State	MOSFET	90	110	
		Schottky	110	130	
Junction-to-Foot	Steady State	MOSFET	30	40	°C/W
		Schottky	33	40	

Notes:

a. Surface mounted on 1" x 1" FR4 board.

MOSFET SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = - 250 μA	- 0.45		- 1.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 20 V, V _{GS} = 0 V			- 1	μA
		V _{DS} = - 20 V, V _{GS} = 0 V, T _J = 85 °C			- 5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ - 5 V, V _{GS} = - 4.5 V	- 10			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 4.5 V, I _D = - 2.7 A		0.095	0.110	Ω
		V _{GS} = - 2.5 V, I _D = - 2.2 A		0.137	0.160	
		V _{GS} = - 1.8 V, I _D = - 1 A		0.205	0.240	
Forward Transconductance ^a	g _{fs}	V _{DS} = - 10 V, I _D = - 2.7 A		7		S
Diode Forward Voltage ^a	V _{SD}	I _S = - 0.9 A, V _{GS} = 0 V		- 0.8	- 1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = - 10 V, V _{GS} = - 4.5 V, I _D = - 2.7 A		5.1	7.7	nC
Gate-Source Charge	Q _{gs}			1.2		
Gate-Drain Charge	Q _{gd}			1.0		
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 10 V, R _L = 10 Ω I _D = - 1 A, V _{GEN} = - 4.5 V, R _g = 6 Ω		16	25	ns
Rise Time	t _r			30	45	
Turn-Off Delay Time	t _{d(off)}			30	45	
Fall Time	t _f			27	40	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = - 0.9 A, di/dt = 100 A/μs		20	40	

Notes:

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

b. Guaranteed by design, not subject to production testing.

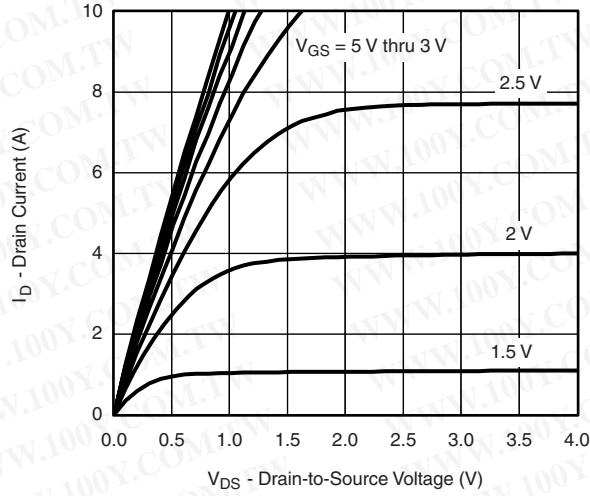
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

SCHOTTKY SPECIFICATIONS T_J = 25 °C, unless otherwise noted

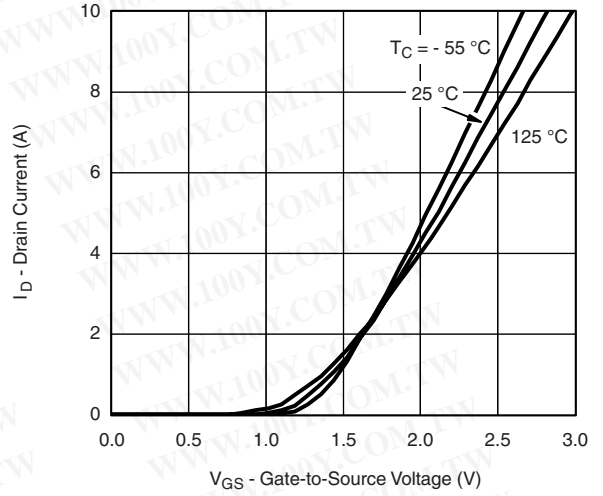
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V _F	I _F = 0.5 A		0.42	0.48	V
		I _F = 0.5 A, T _J = 125 °C		0.33	0.4	
Maximum Reverse Leakage Current	I _{rm}	V _r = 20 V		0.002	0.100	mA
		V _r = 20 V, T _J = 85 °C		0.10	1	
		V _r = 20 V, T _J = 125 °C		1.5	10	
Junction Capacitance	C _T	V _r = 10 V		31		pF



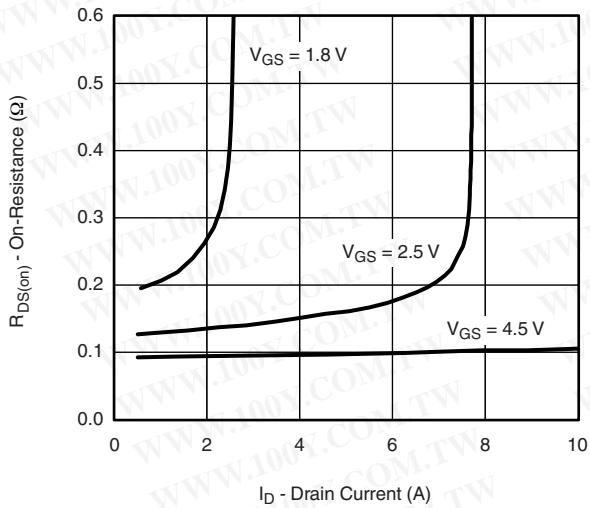
MOSFET TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



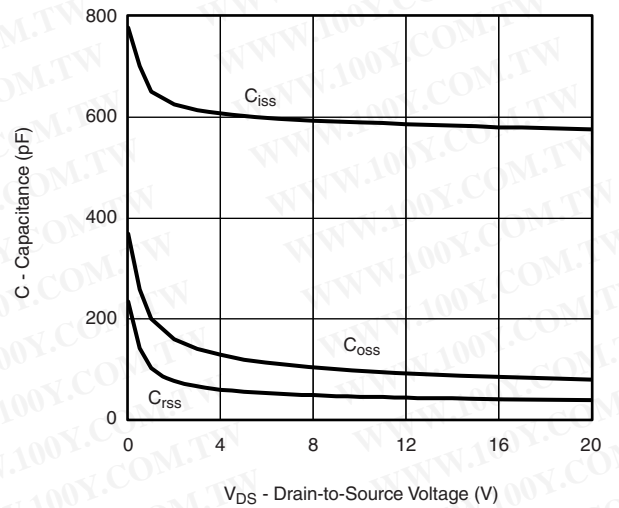
Output Characteristics



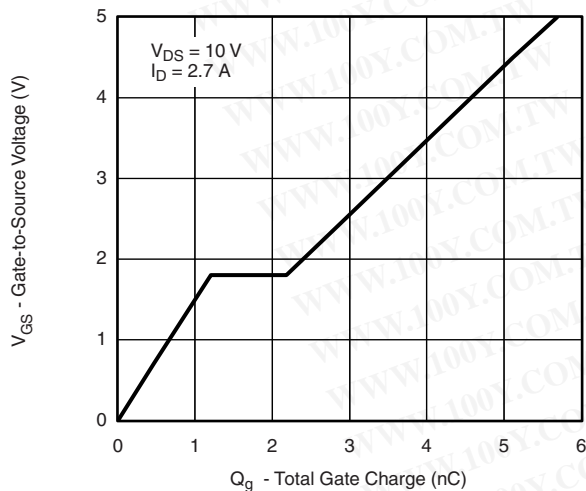
Transfer Characteristics



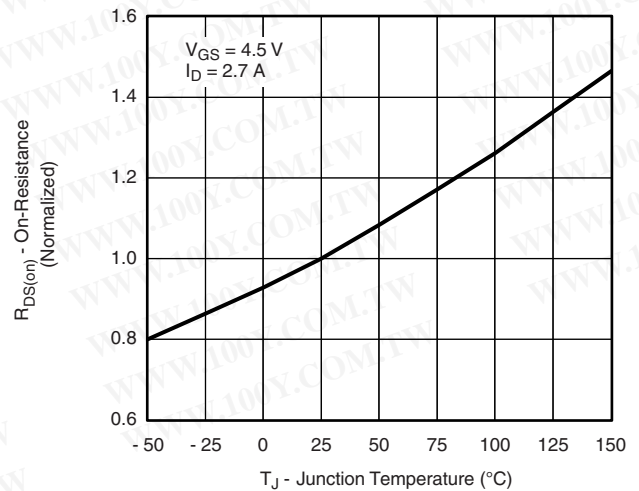
On-Resistance vs. Drain Current



Capacitance

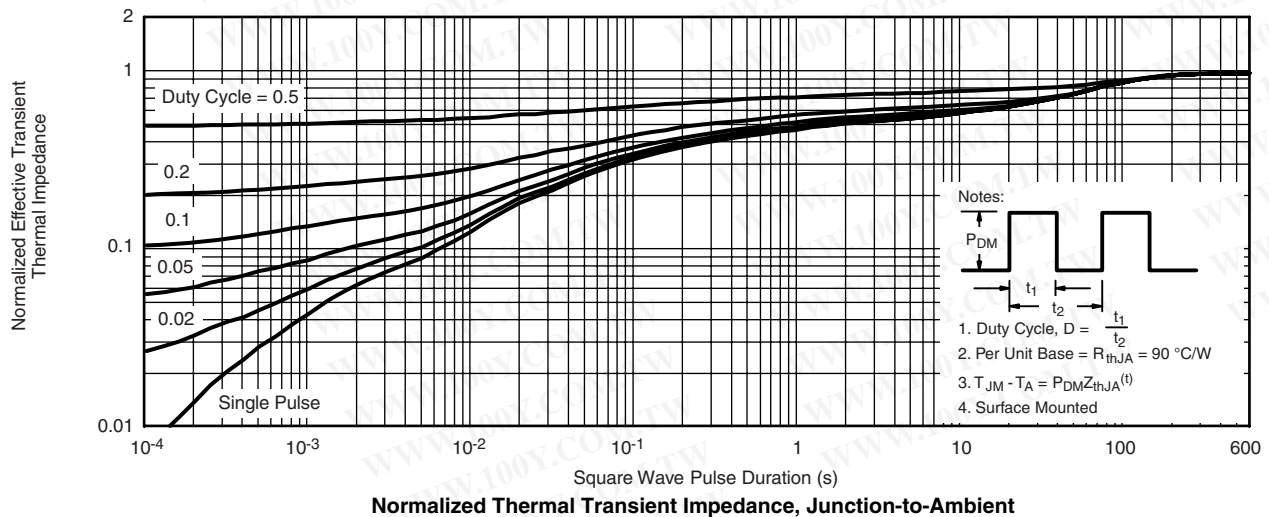
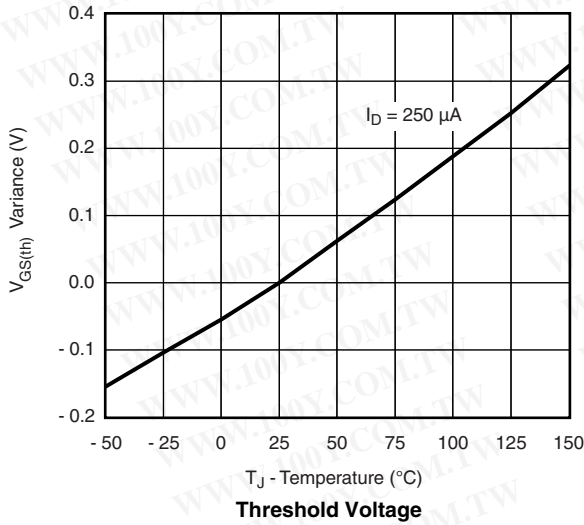
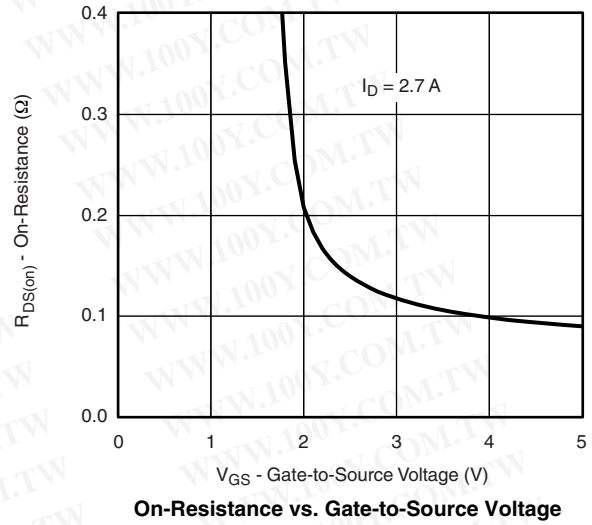
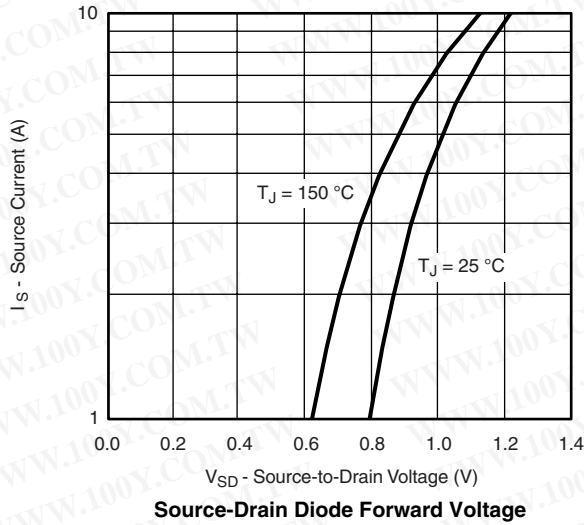


Gate Charge



On-Resistance vs. Junction Temperature

MOSFET TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

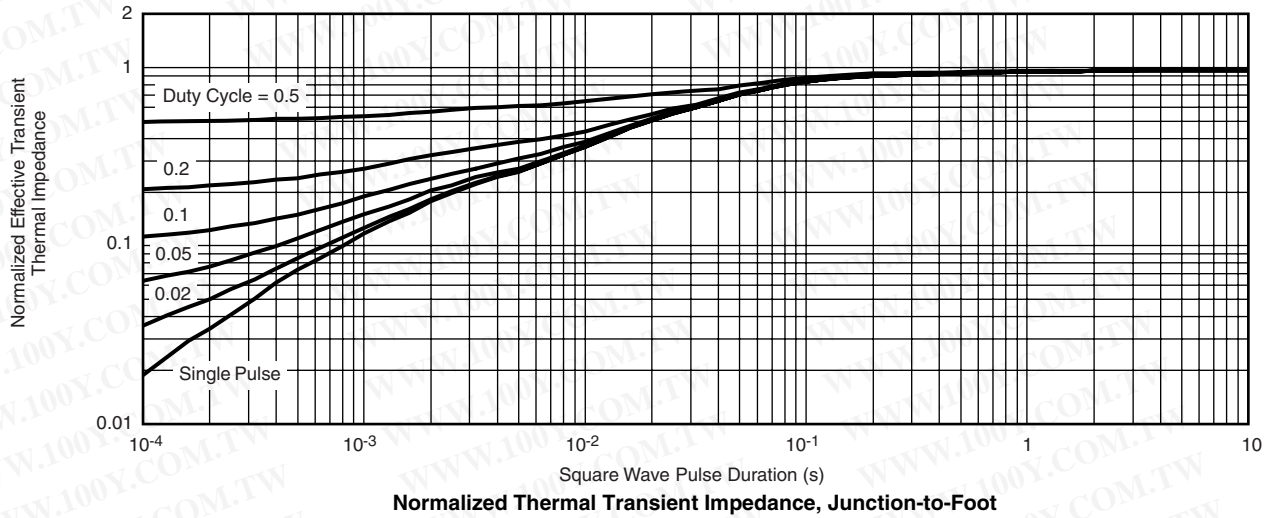




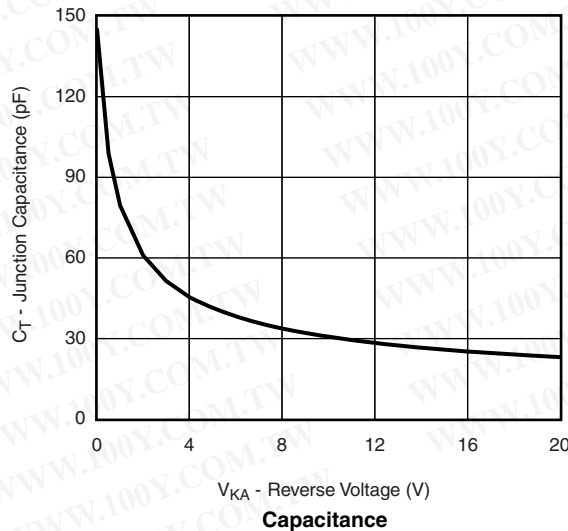
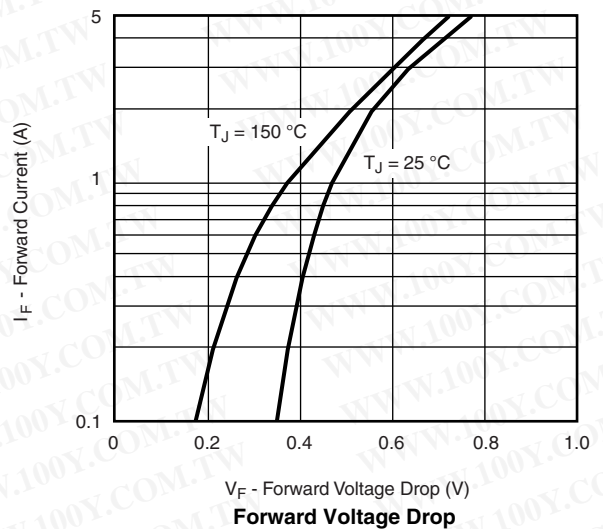
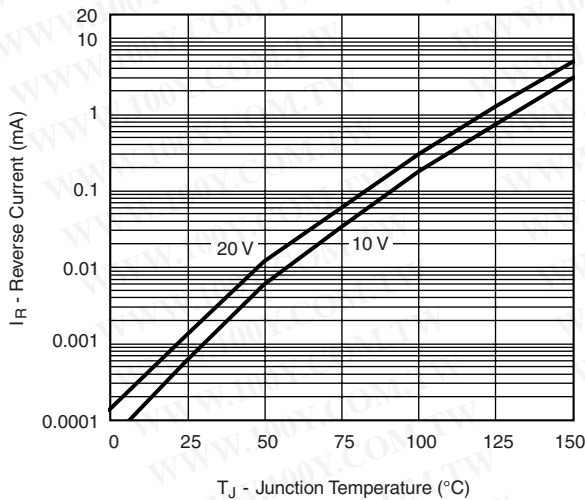
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MOSFET TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

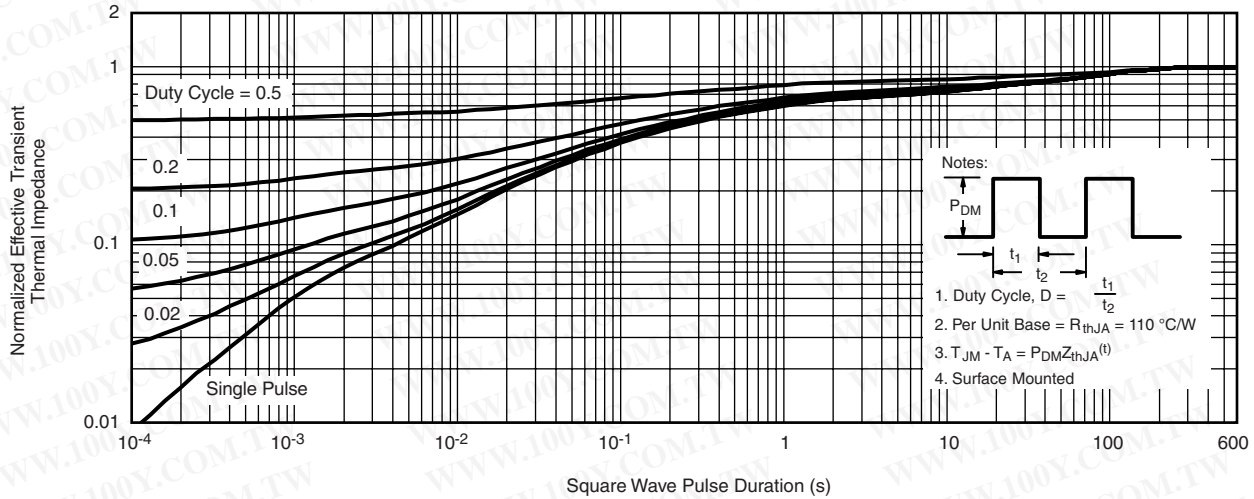


SCHOTTKY TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

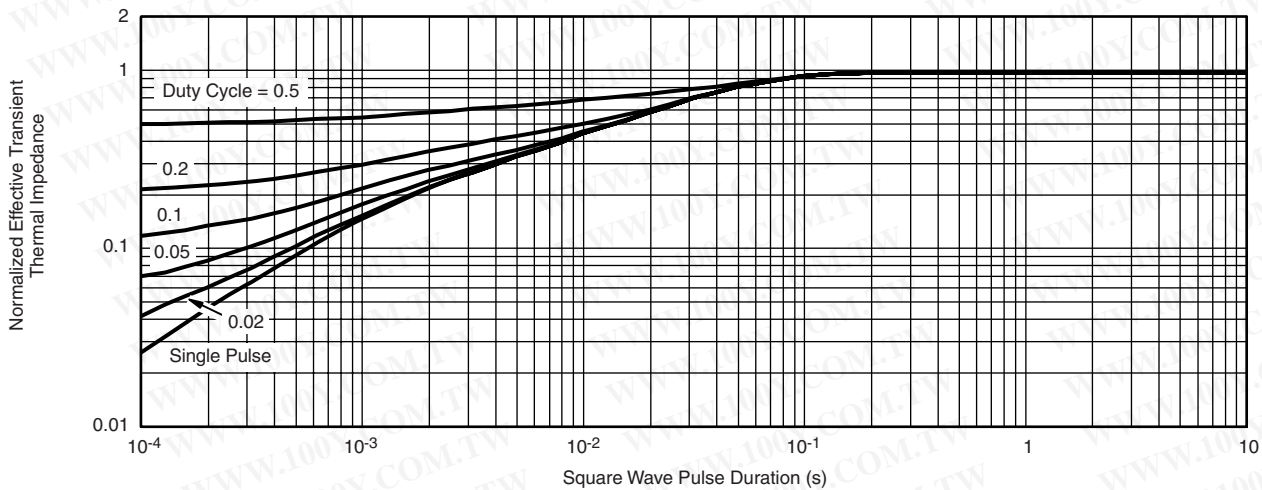




SCHOTTKY TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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/ppq?71239.

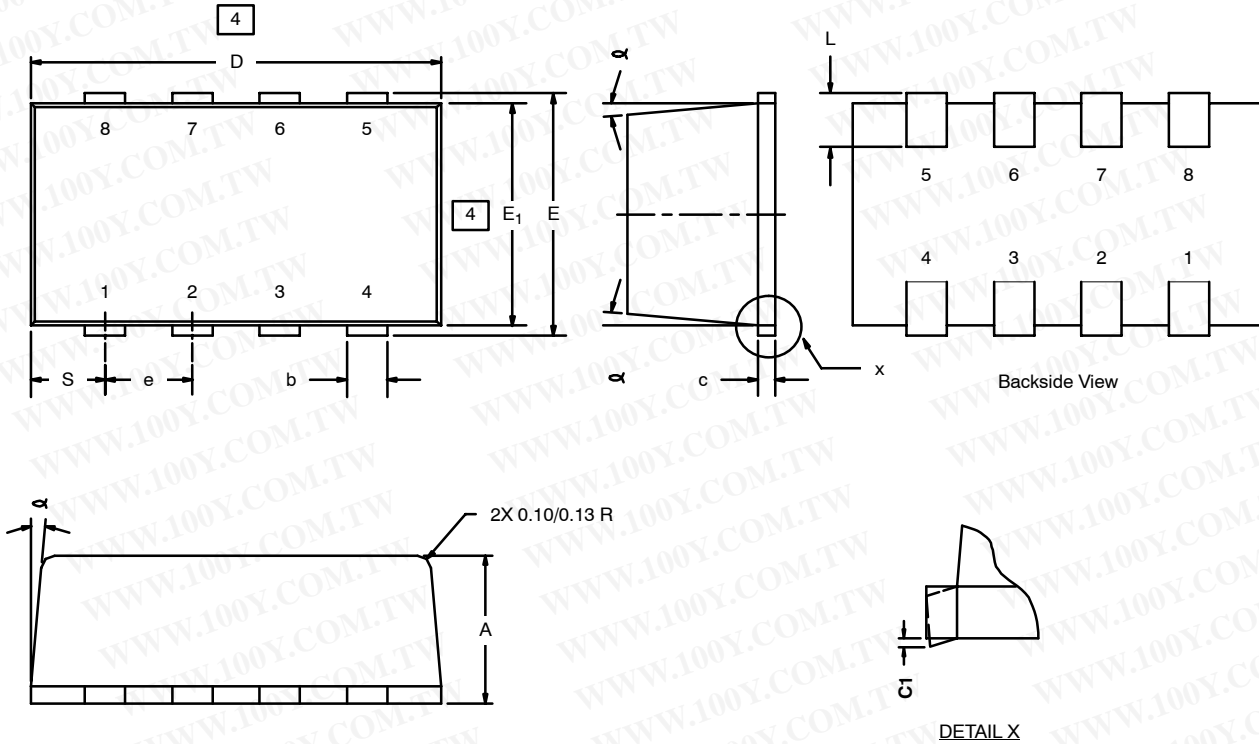


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Package Information

Vishay Siliconix

1206-8 ChipFET®



NOTES:

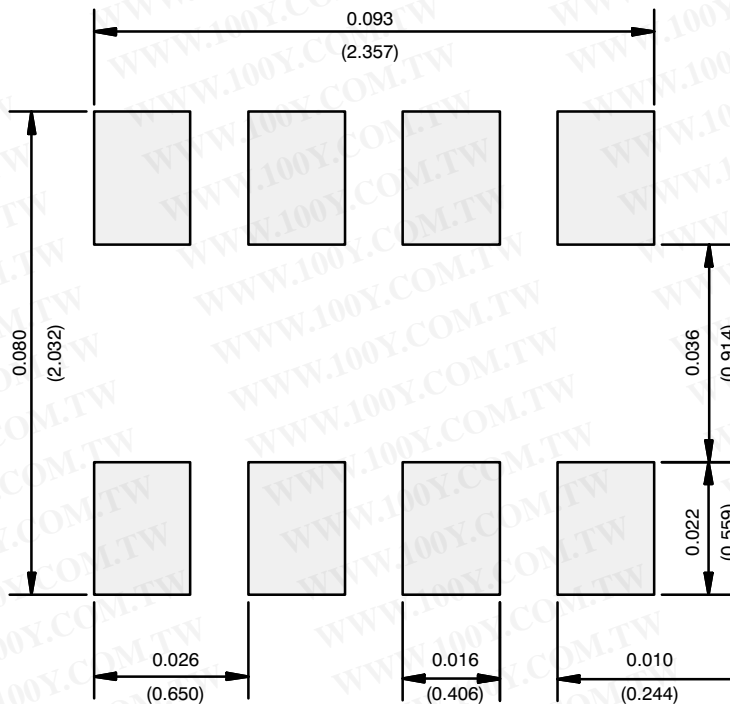
- All dimensions are in millimeters.
- Mold gate burrs shall not exceed 0.13 mm per side.
- Leadframe to molded body offset is horizontal and vertical shall not exceed 0.08 mm.
- Dimensions exclusive of mold gate burrs.
- No mold flash allowed on the top and bottom lead surface.

Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	1.00	—	1.10	0.039	—	0.043
b	0.25	0.30	0.35	0.010	0.012	0.014
c	0.1	0.15	0.20	0.004	0.006	0.008
c1	0	—	0.038	0	—	0.0015
D	2.95	3.05	3.10	0.116	0.120	0.122
E	1.825	1.90	1.975	0.072	0.075	0.078
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	0.65 BSC			0.0256 BSC		
L	0.28	—	0.42	0.011	—	0.017
S	0.55 BSC			0.022 BSC		
alpha	5°Nom			5°Nom		
ECN: C-03528—Rev. F, 19-Jan-04 DWG: 5547						

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RECOMMENDED MINIMUM PADS FOR 1206-8 ChipFET®



Recommended Minimum Pads
Dimensions in Inches/(mm)

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