



勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Si4340DY
 Vishay Siliconix

Dual N-Channel 20-V (D-S) MOSFET with Schottky Diode

PRODUCT SUMMARY			
	V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
Channel-1	20	0.012 at V _{GS} = 10 V	9.6
		0.0175 at V _{GS} = 4.5 V	7.8
Channel-2		0.010 at V _{GS} = 10 V	13.5
		0.0115 at V _{GS} = 4.5 V	12.8

SCHOTTKY PRODUCT SUMMARY		
V _{DS} (V)	V _{SD} (V) Diode Forward Voltage	I _F (A)
20	0.53 V at 3 A	2.0

FEATURES

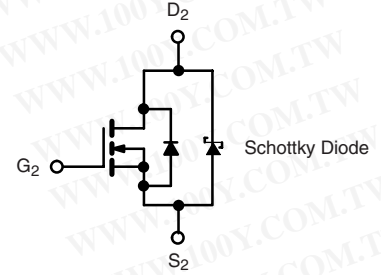
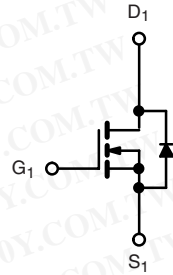
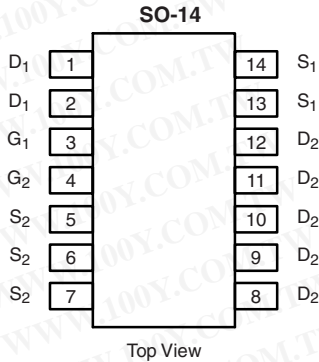
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFET
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
 COMPLIANT
 HALOGEN
FREE
 Available

APPLICATIONS

- DC/DC Converters
- Game Stations
- Notebook PC Logic



Ordering Information: Si4340DY-T1-E3 (Lead (Pb)-free)
 Si4340DY-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted							
Parameter	Symbol	Channel-1		Channel-2		Unit	
		10 s	Steady State	10 s	Steady State		
Drain-Source Voltage	V _{DS}	20				V	
Gate-Source Voltage	V _{GS}	± 20		± 16			
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	9.6	7.3	13.5	9.9	A
		T _A = 70 °C	7.7	5.8	10.8	7.5	
Pulsed Drain Current	I _{DM}	40		50		W	
Continuous Source Current (Diode Conduction) ^a	I _S	1.8	1.04	2.73	1.30		
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	2.0	1.14	3.0	1.43	W
		T _A = 70 °C	1.28	0.73	1.9	0.91	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150				°C	

THERMAL RESISTANCE RATINGS									
Parameter	Symbol	Channel-1		Channel-2		Schottky		Unit	
		Typ.	Max.	Typ.	Max.	Typ.	Max.		
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 s	53	62.5	35	42	40	48	°C/W
		Steady State	92	110	72	87	76	93	
Maximum Junction-to-Foot (Drain)	R _{thJF}	35	42	18	23	21	25		

Notes:

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

MOSFET SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted							
Parameter	Symbol	Test Conditions	Min.	Typ. ^a	Max.	Unit	
Static							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	Ch-1	0.8	2.00	V	
			Ch-2	0.8	1.90		
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	Ch-1		100	nA	
		$V_{DS} = 0\text{ V}, V_{GS} = \pm 12\text{ V}$	Ch-2		100		
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$	Ch-1		1	μA	
			Ch-2		100		
		$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 85\text{ }^\circ\text{C}$	Ch-1		15		
			Ch-2		4000		
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$	Ch-1	20		A	
			Ch-2	30			
Drain-Source On-State Resistance ^b	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 9.6\text{ A}$	Ch-1		0.0095	0.012	Ω
		$V_{GS} = 10\text{ V}, I_D = 13.5\text{ A}$	Ch-2		0.007	0.010	
		$V_{GS} = 4.5\text{ V}, I_D = 7.8\text{ A}$	Ch-1		0.0135	0.0175	
		$V_{GS} = 4.5\text{ V}, I_D = 12.8\text{ A}$	Ch-2		0.0085	0.0115	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 9.6\text{ A}$	Ch-1		25	S	
		$V_{DS} = 15\text{ V}, I_D = 13.5\text{ A}$	Ch-2		38		
Diode Forward Voltage ^b	V_{SD}	$I_S = 1.8\text{ A}, V_{GS} = 0\text{ V}$	Ch-1		0.74	1.1	V
		$I_S = 2.73\text{ A}, V_{GS} = 0\text{ V}$	Ch-2		0.485	0.53	
Dynamic^a							
Total Gate Charge	Q_g	Channel-1 $V_{DS} = 10\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 9.6\text{ A}$	Ch-1		10	15	nC
			Ch-2		17	25	
Gate-Source Charge	Q_{gs}	Channel-2 $V_{DS} = 10\text{ V}, V_{GS} = 4.5\text{ V}, I_D = -13.5\text{ A}$	Ch-1		3.3		nC
			Ch-2		4.5		
Gate-Drain Charge	Q_{gd}	Channel-2 $V_{DS} = 10\text{ V}, V_{GS} = 4.5\text{ V}, I_D = -13.5\text{ A}$	Ch-1		3.1		nC
			Ch-2		4.5		
Gate Resistance	R_g	$f = 1\text{ MHz}$	Ch-1	0.45	0.9	1.35	Ω
			Ch-2	0.7	1.4	2.1	
Turn-On Delay Time	$t_{d(on)}$	Channel-1 $V_{DD} = 10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \equiv 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$	Ch-1		15	25	ns
Rise Time	t_r	Channel-1 $V_{DD} = 10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \equiv 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$	Ch-1		16	25	
			Ch-2		22	35	
Turn-Off Delay Time	$t_{d(off)}$	Channel-2 $V_{DD} = 10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \equiv 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$	Ch-1		42	65	
			Ch-2		68	100	
Fall Time	t_f	Channel-2 $V_{DD} = 10\text{ V}, R_L = 10\text{ }\Omega$ $I_D \equiv 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$	Ch-1		16	25	
			Ch-2		19	30	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.8\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$	Ch-1		35	60	
		$I_F = 2.73\text{ A}, dI/dt = 100\text{ }\mu\text{A}/\mu\text{s}$	Ch-2		38	65	

Notes:

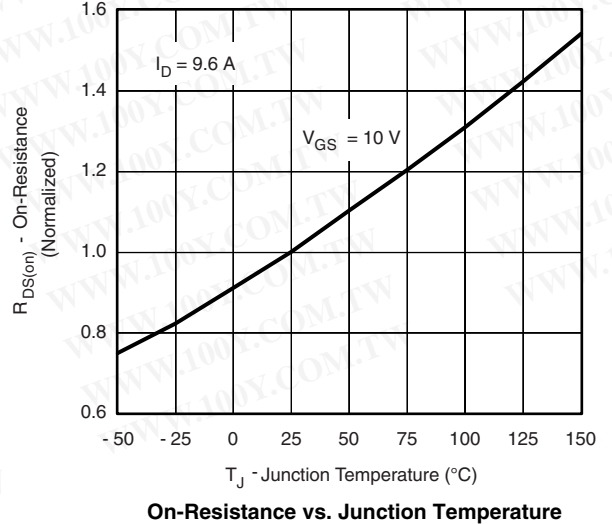
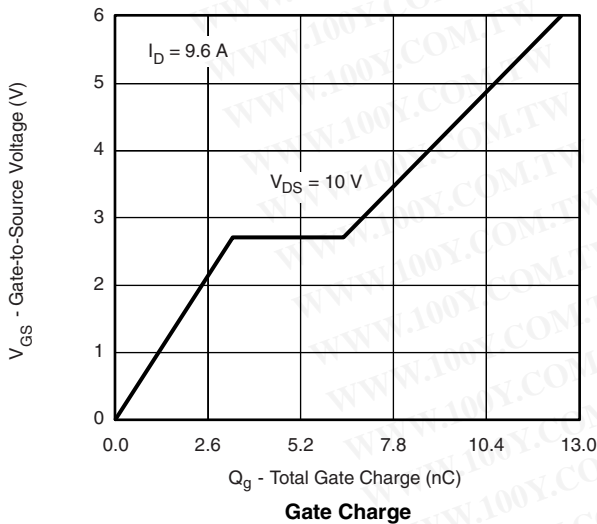
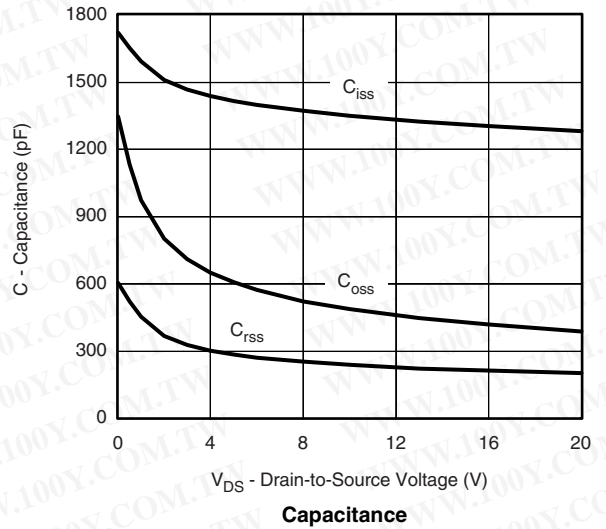
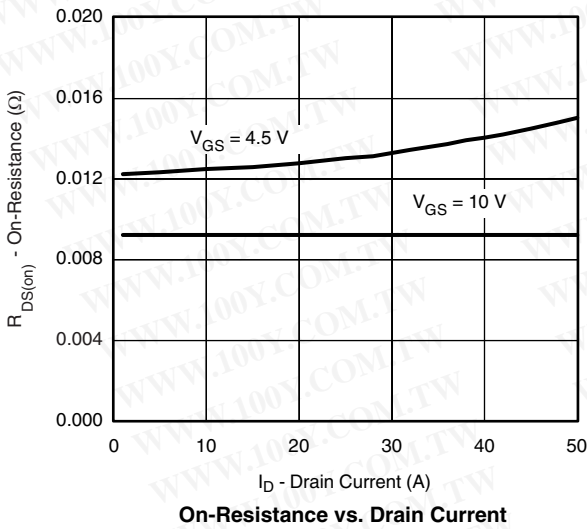
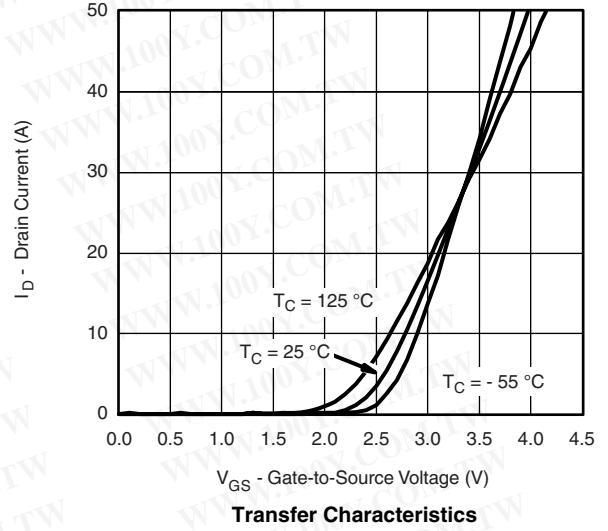
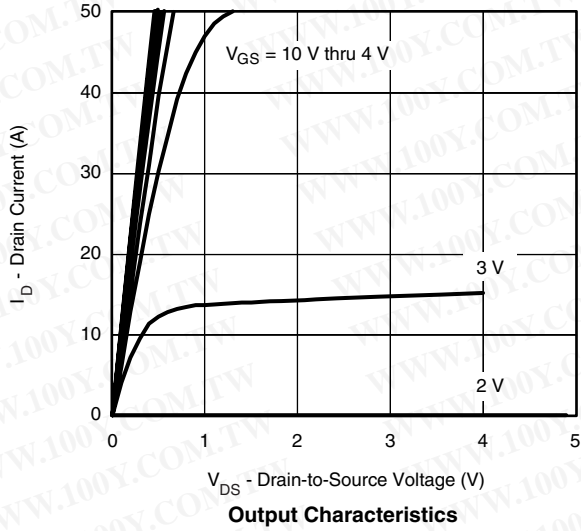
- a. Guaranteed by design, not subject to production testing.
 b. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

SCHOTTKY SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	$I_F = 3\text{ A}$		0.485	0.53	V
		$I_F = 3\text{ A}, T_J = 125\text{ }^\circ\text{C}$		0.42	0.42	
Maximum Reverse Leakage Current	I_{rm}	$V_R = 20\text{ V}$		0.008	0.100	mA
		$V_R = 20\text{ V}, T_J = 75\text{ }^\circ\text{C}$		0.4	5	
Junction Capacitance	C_T	$V_R = -20\text{ V}, T_J = 125\text{ }^\circ\text{C}$		6.5	20	pF
		$V_R = 15\text{ V}$		102		

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.

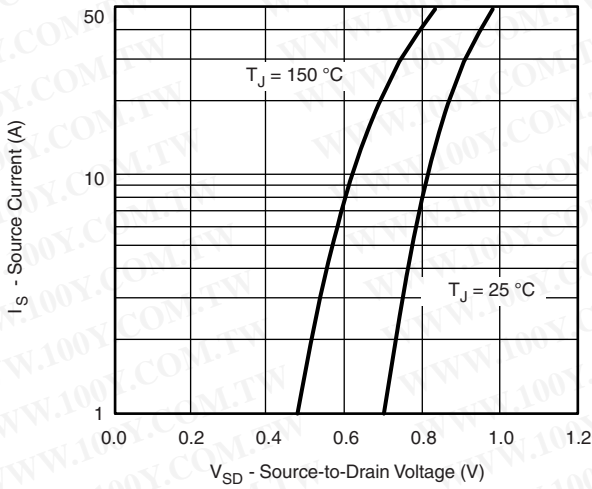


CHANNEL-1 TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

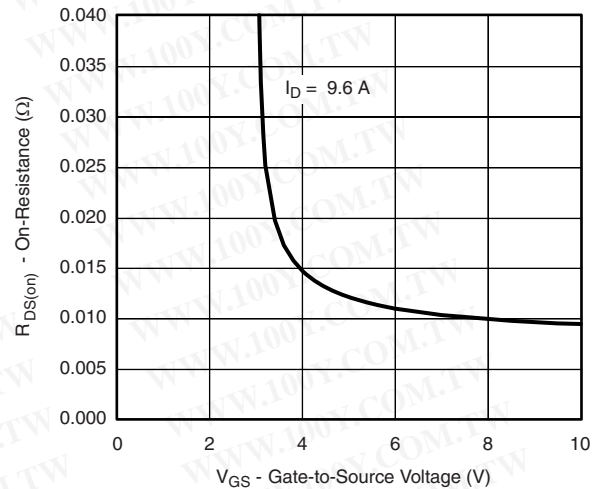




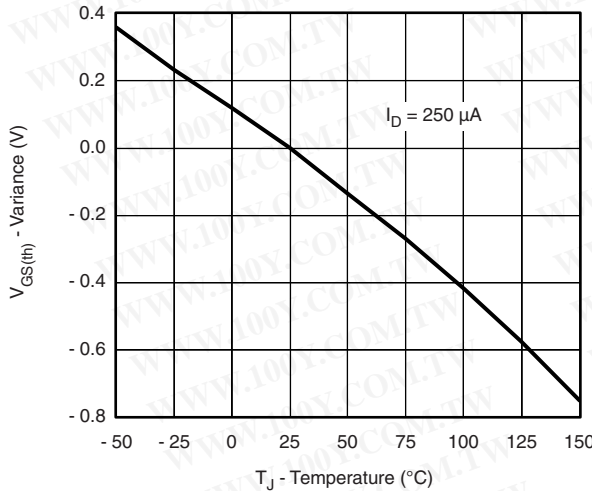
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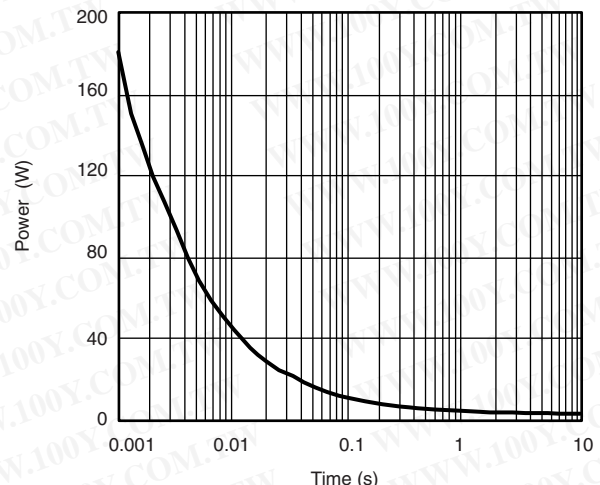
Source-Drain Diode Forward Voltage



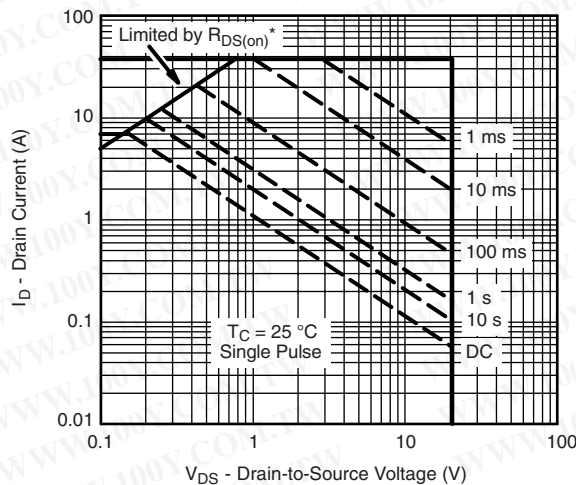
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



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

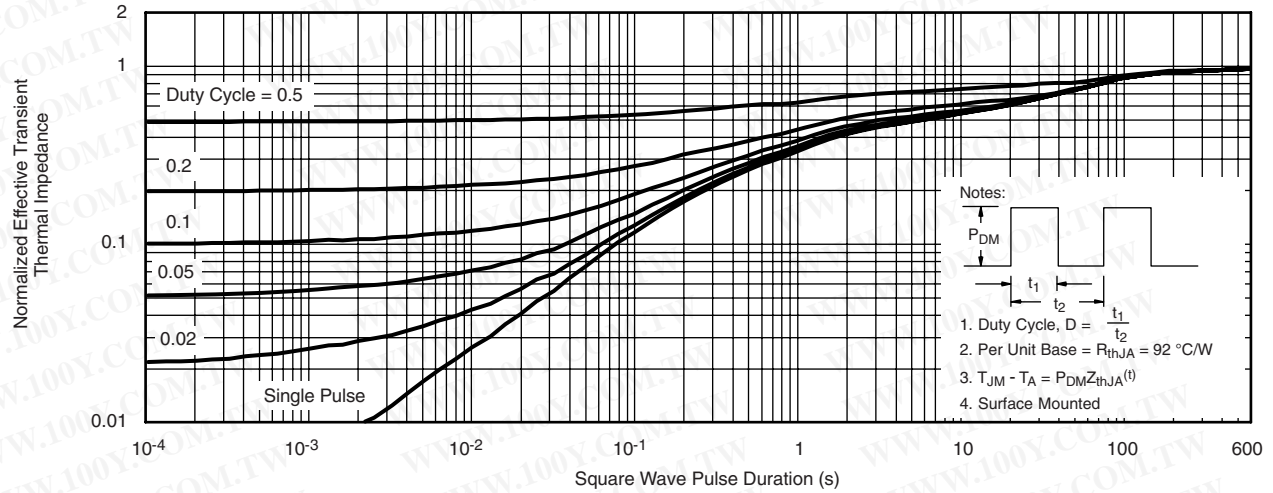
Safe Operating Area, Junction-to-Case



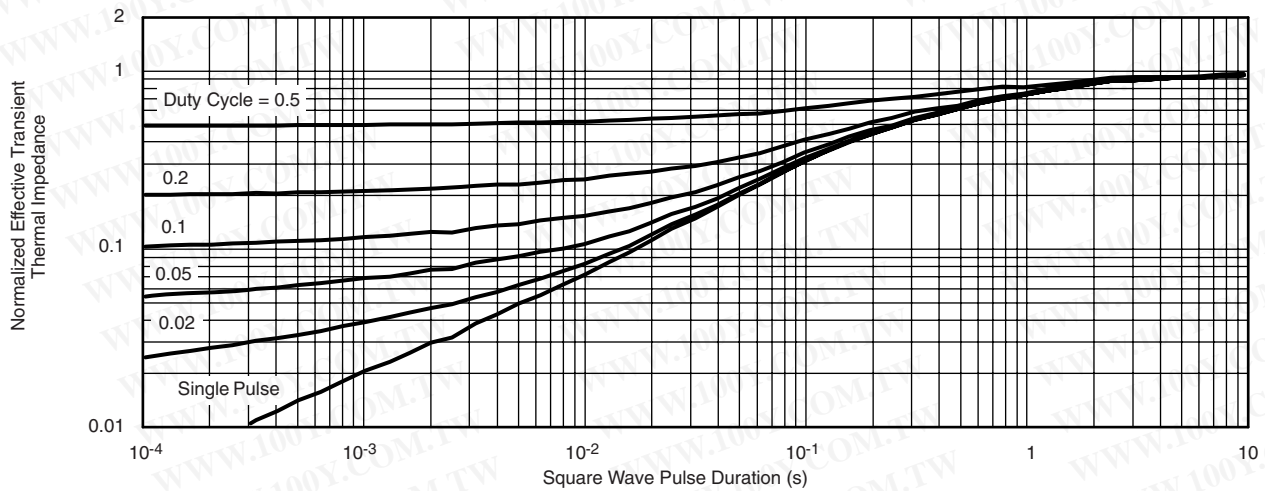
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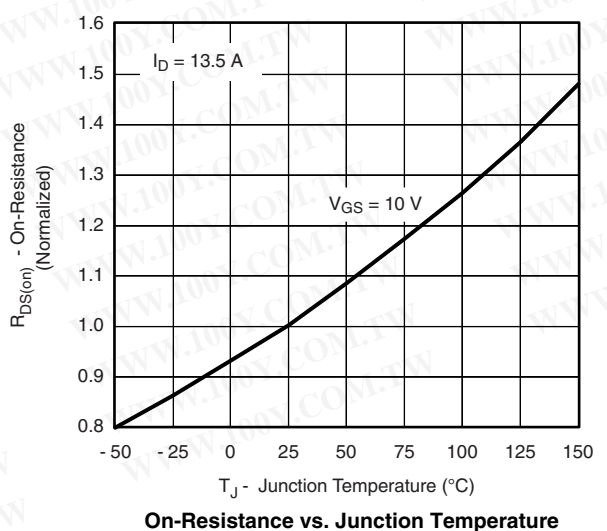
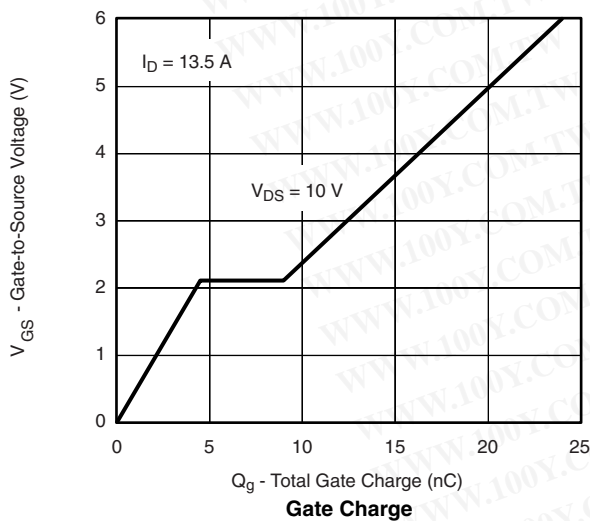
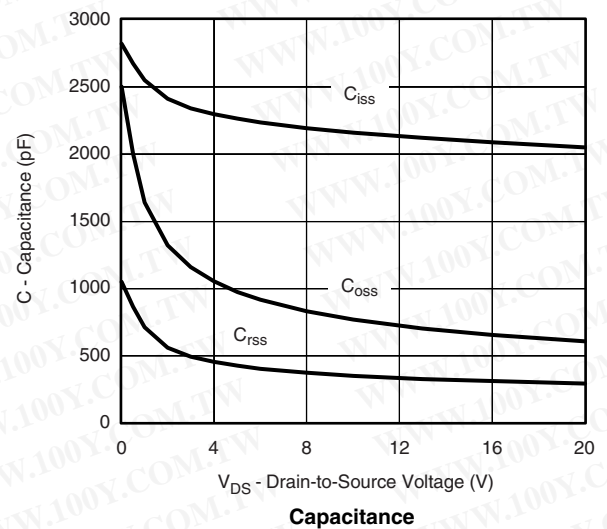
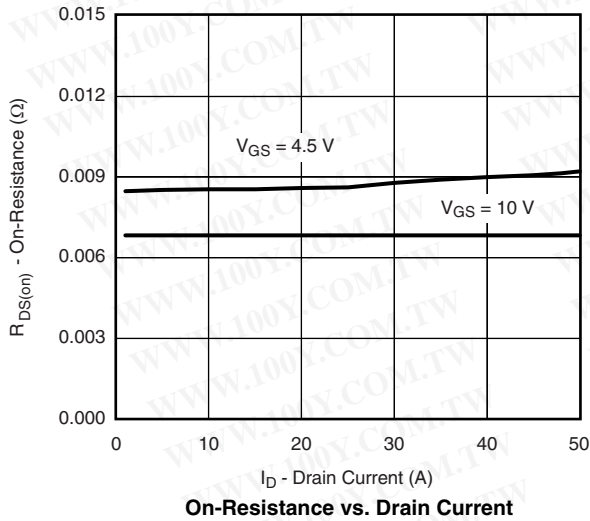
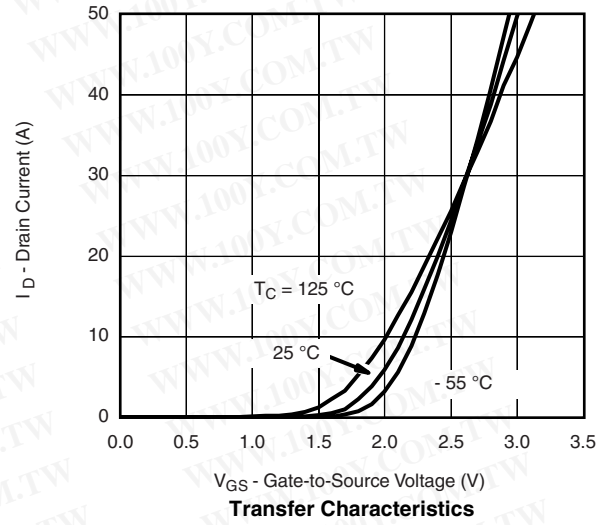
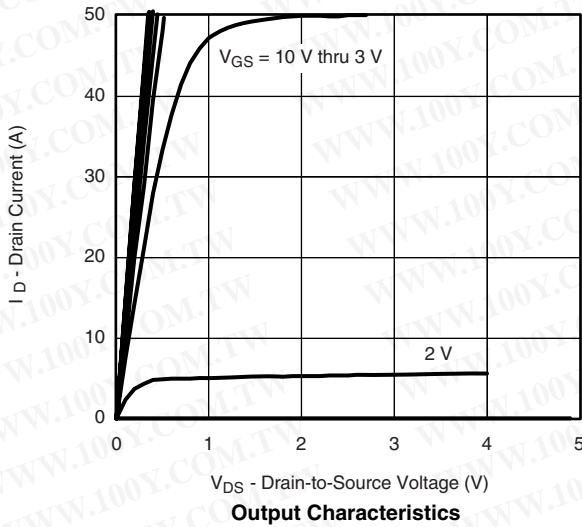
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



CHANNEL-2 TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

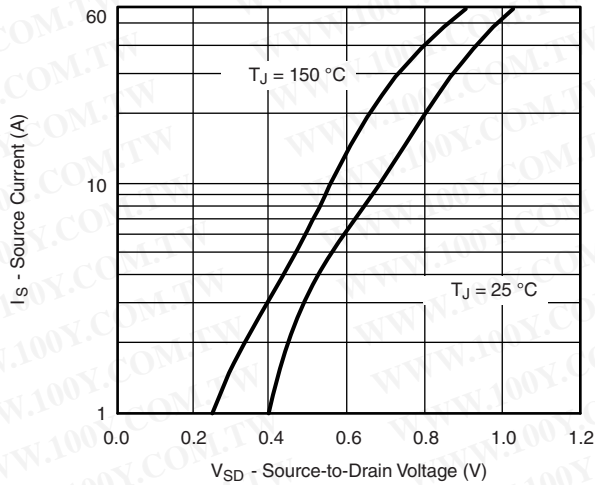




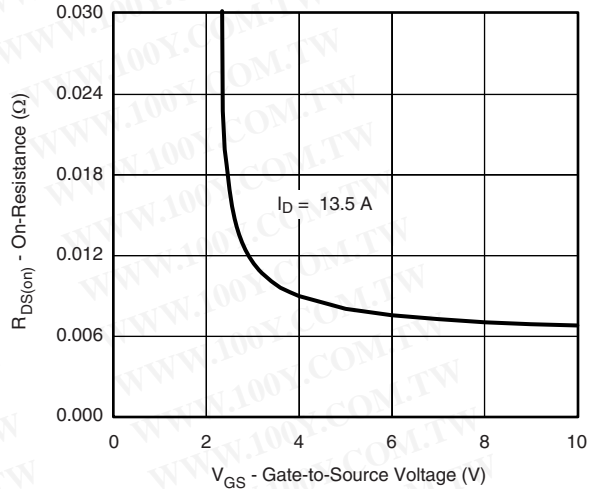
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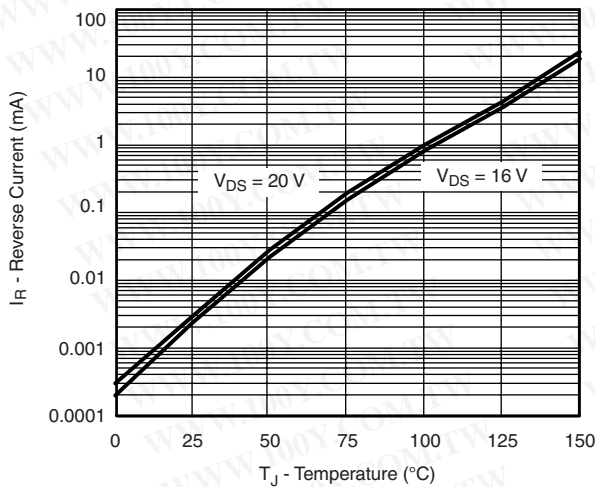
CHANNEL-2 TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



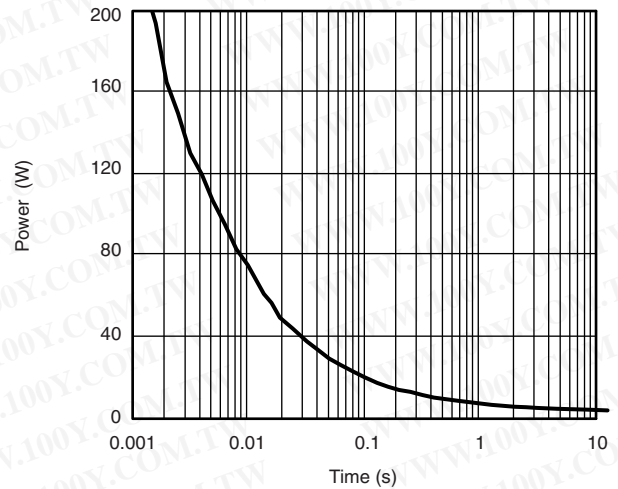
Source-Drain Diode Forward Voltage



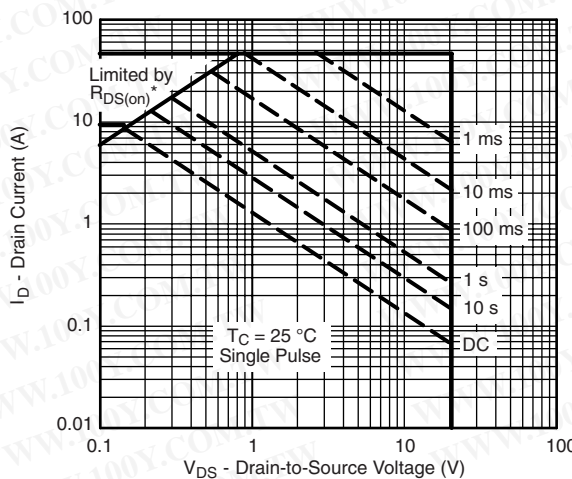
On-Resistance vs. Gate-to-Source Voltage



Reverse Current vs. Junction Temperature



Single Pulse Power

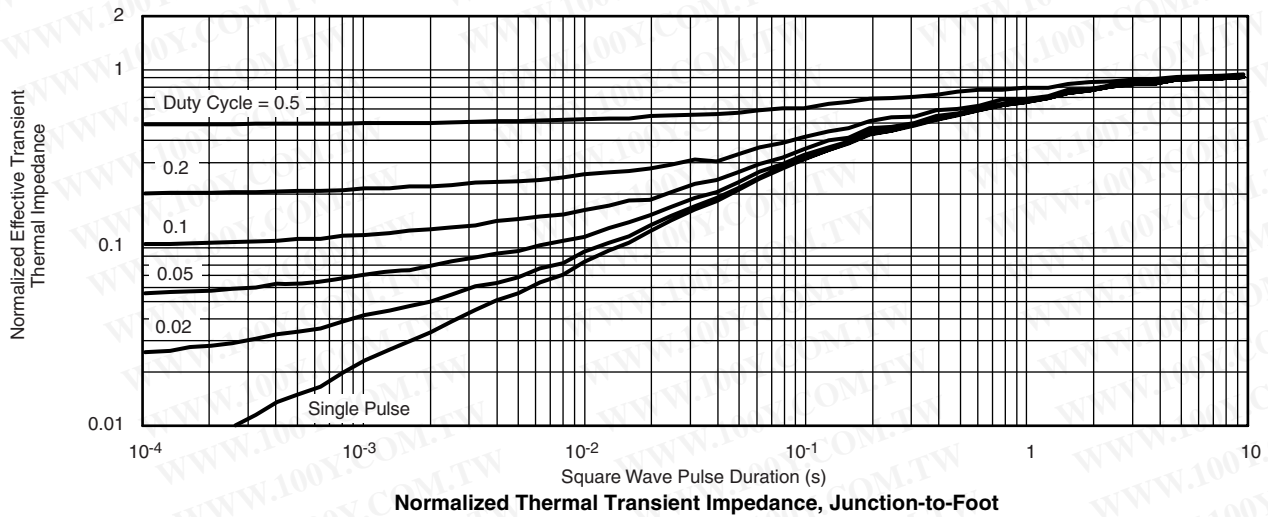
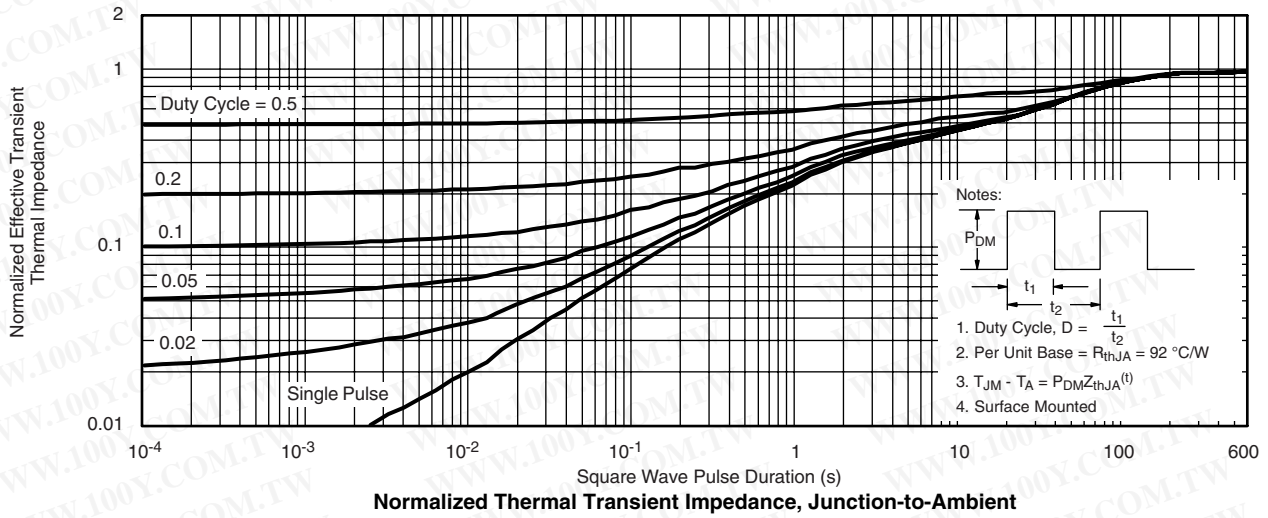


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

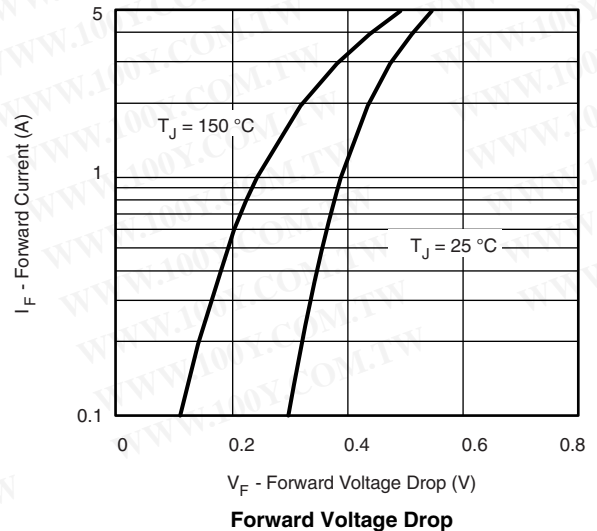
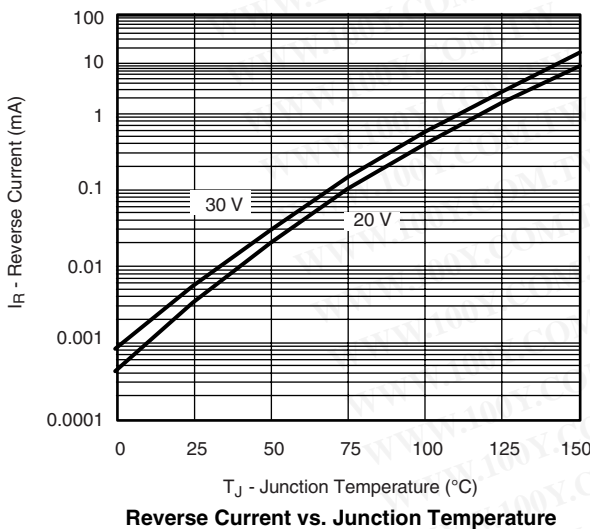
Safe Operating Area, Junction-to-Case



CHANNEL-2 TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

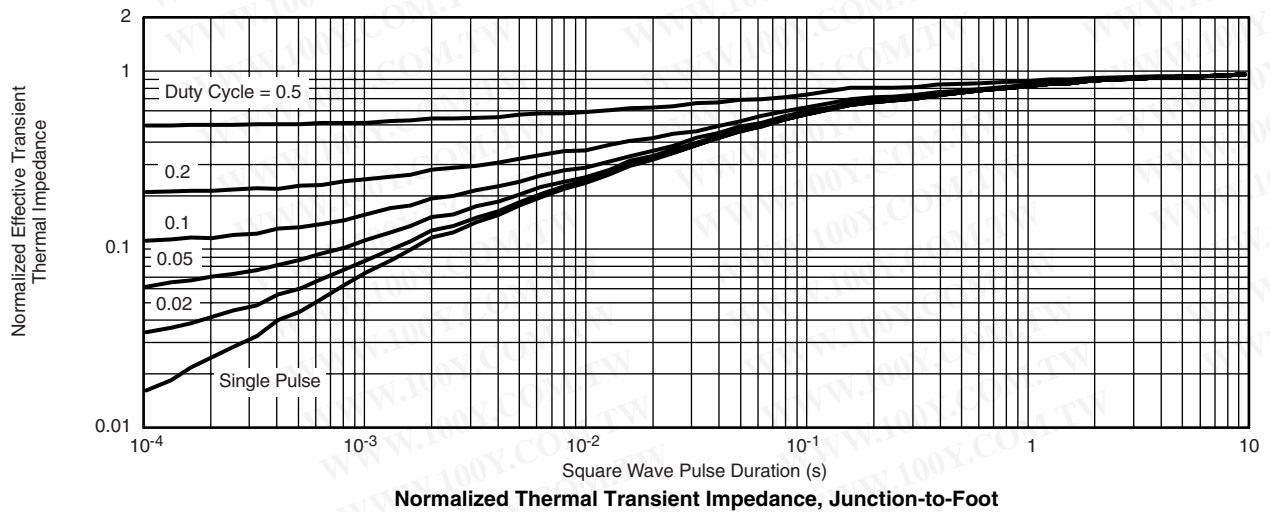
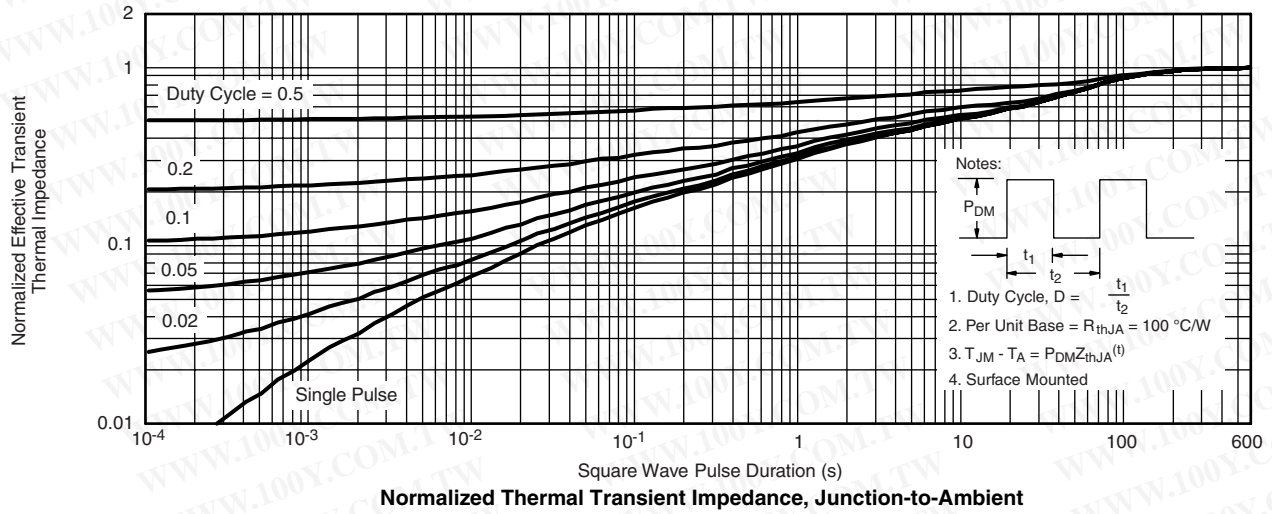
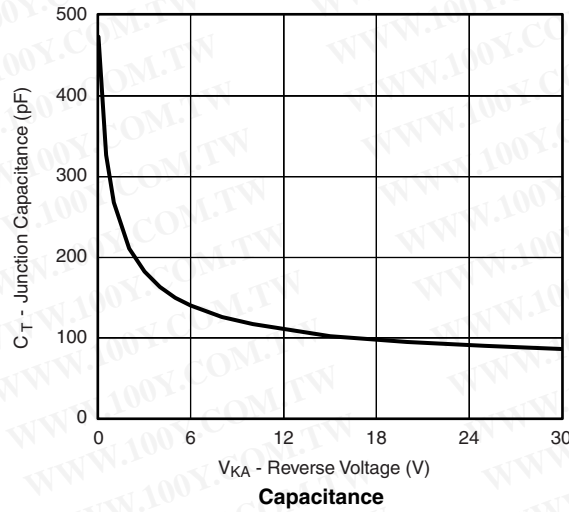


SCHOTTKY TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





SCHOTTKY TYPICAL CHARACTERISTICS 25 °C, unless otherwise 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 www.vishay.com/ppg?72376.

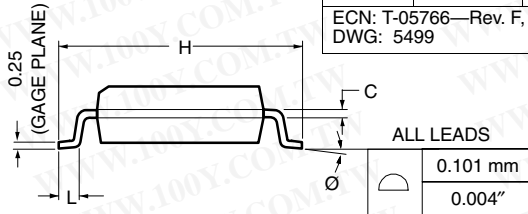
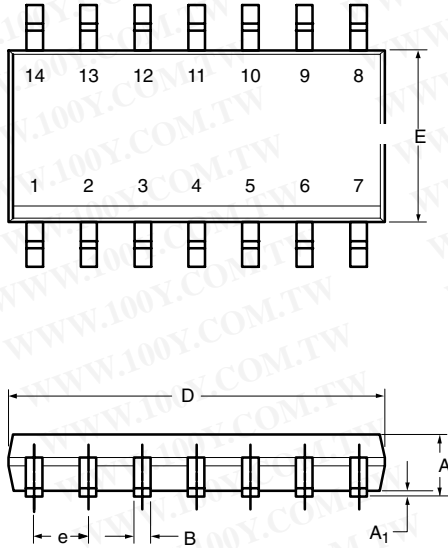


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Package Information

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SOIC (NARROW): 14-LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A₁	0.10	0.20	0.004	0.008
B	0.38	0.51	0.015	0.020
C	0.18	0.23	0.007	0.009
D	8.55	8.75	0.336	0.344
E	3.8	4.00	0.149	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
L	0.50	0.93	0.020	0.037
Ø	0°	8°	0°	8°

ECN: T-05766—Rev. F, 19-Sep-05
 DWG: 5499



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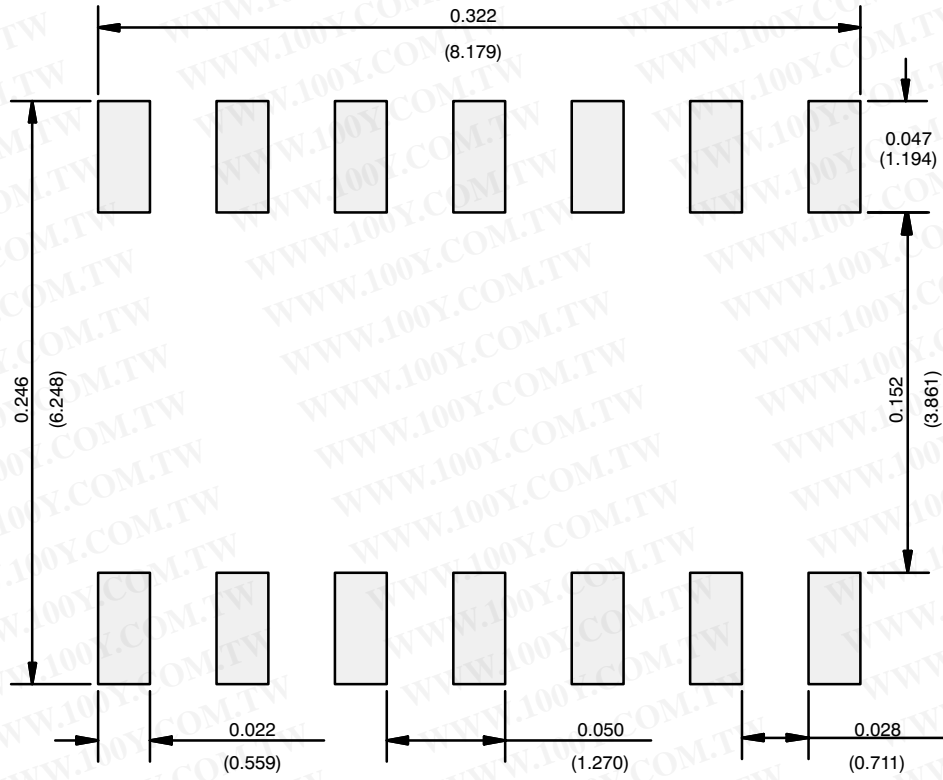
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RECOMMENDED MINIMUM PADS FOR SO-14



Recommended Minimum Pads
Dimensions in Inches/(mm)

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