



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

Si1470DH
 Vishay Siliconix

N-Channel 30 V (D-S) MOSFET

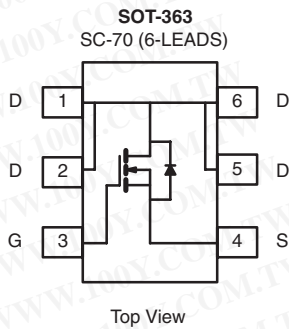
PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)	Q _g (Typ.)
30	0.066 at V _{GS} = 4.5 V	4.0 ^a	4.85
	0.095 at V _{GS} = 2.5 V	4.0	

FEATURES

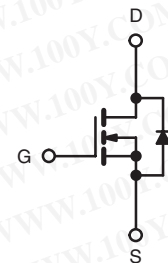
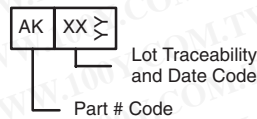
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFET
- 100 % R_g and UIS Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
 COMPLIANT
 HALOGEN
FREE
 Available



Marking Code



N-Channel MOSFET

Ordering Information: Si1470DH-T1-E3 (Lead (Pb)-free)
 Si1470DH-T1-GE3 (Lead (Pb)-free and Halogen-free)

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}	± 12	
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _C = 25 °C	5.1
		T _C = 70 °C	4.0
		T _A = 25 °C	3.8 ^{b, c}
		T _A = 70 °C	3.1 ^{b, c}
Pulsed Drain Current	I _{DM}	12	A
Avalanche Current	I _{AS}	10	
Repetitive Avalanche Energy	E _{AS}	5	mJ
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	2.3
		T _A = 25 °C	1.3 ^{b, c}
Maximum Power Dissipation ^a	P _D	T _C = 25 °C	2.8
		T _C = 70 °C	1.8
		T _A = 25 °C	1.5 ^{b, c}
		T _A = 70 °C	1.0 ^{b, c}
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{b, d}	R _{thJA}	60	80	°C/W	
Maximum Junction-to-Foot (Drain)	R _{thJF}	34	45		

Notes:

- Based on T_C = 25 °C.
- Surface mounted on 1" x 1" FR4 board.
- t = 5 s.
- Maximum under steady state conditions is 125 °C/W.

SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	30			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = 250\text{ }\mu\text{A}$		27.41		mV/ $^\circ\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			-3.83		
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	0.6		1.6	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 12\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1	nA
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 85\text{ }^\circ\text{C}$			10	μA
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 4.5\text{ V}$	12			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 3.8\text{ A}$		0.055	0.066	Ω
		$V_{GS} = 2.5\text{ V}, I_D = 3.1\text{ A}$		0.079	0.095	
Forward Transconductance	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 3.8\text{ A}$		11.2		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		510		pF
Output Capacitance	C_{oss}			66		
Reverse Transfer Capacitance	C_{rss}			39		
Total Gate Charge	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 5\text{ V}, I_D = 3.8\text{ A}$		5	7.5	nC
		$V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 3.8\text{ A}$		4.85	7.3	
Q_{gs}			1.35			
Q_{gd}			1.26			
Gate Resistance	R_g	$f = 1\text{ MHz}$		7.3	10.95	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 5.0\text{ }\Omega$ $I_D \cong 3.0\text{ A}, V_{GEN} = 4.5\text{ V}, R_g = 1\text{ }\Omega$		9.0	15	ns
Rise Time	t_r			51	77	
Turn-Off Delay Time	$t_{d(off)}$			18	27	
Fall Time	t_f			7.1	10.65	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$			2.3	A
Pulse Diode Forward Current ^a	I_{SM}				12	
Body Diode Voltage	V_{SD}	$I_S = 1.8\text{ A}$		0.8	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 2.3\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		11.5	17.25	nC
Body Diode Reverse Recovery Charge	Q_{rr}			5.2	7.8	
Reverse Recovery Fall Time	t_a			7.7		ns
Reverse Recovery Rise Time	t_b			3.8		

Notes:

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
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.

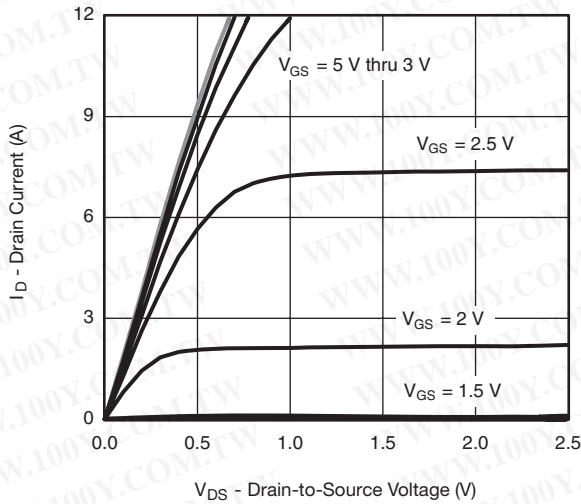
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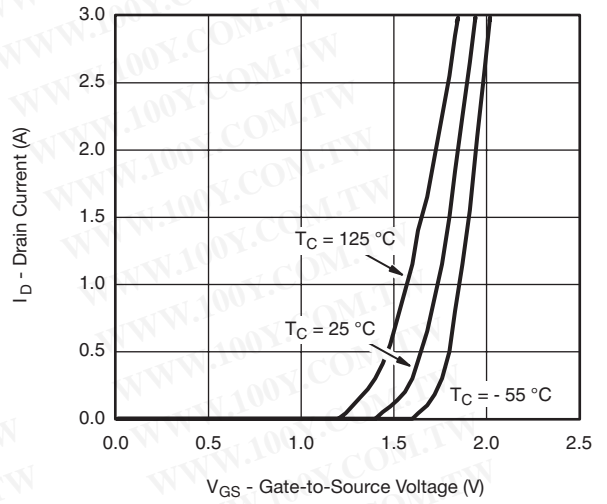
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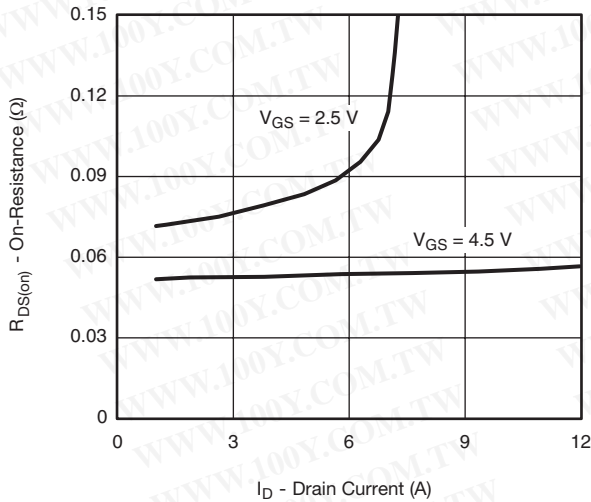
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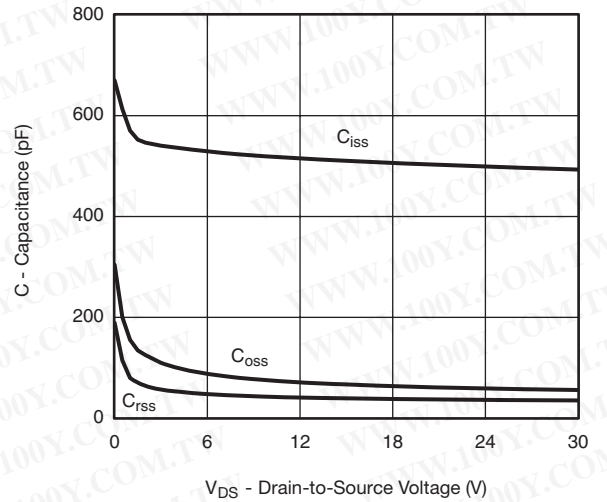
Output Characteristics



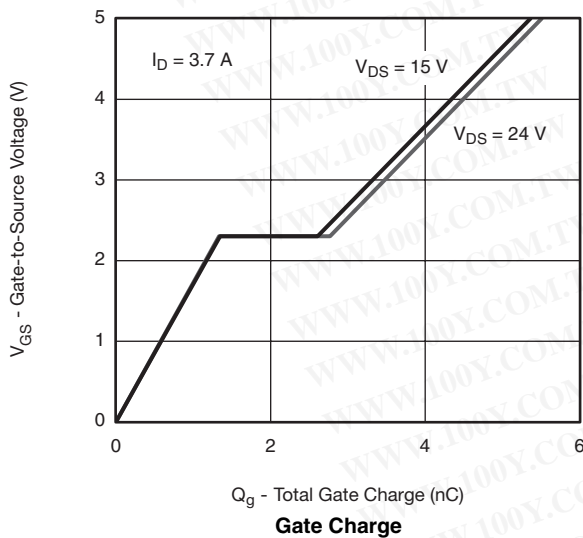
Transfer Characteristics Curves vs. Temperature



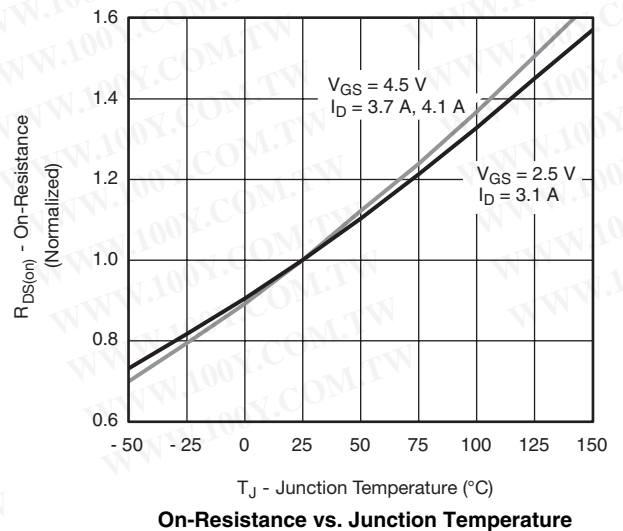
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

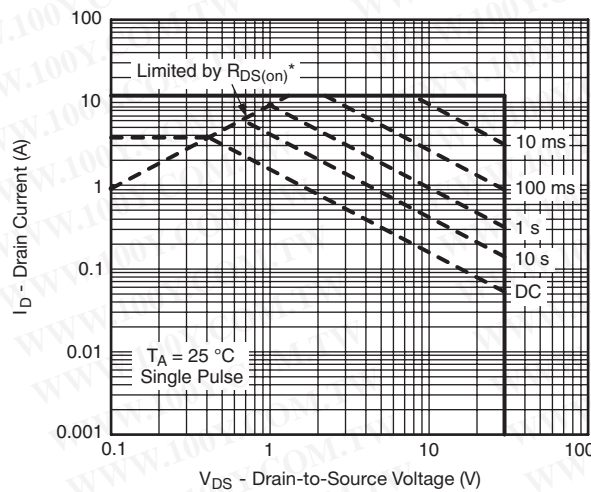
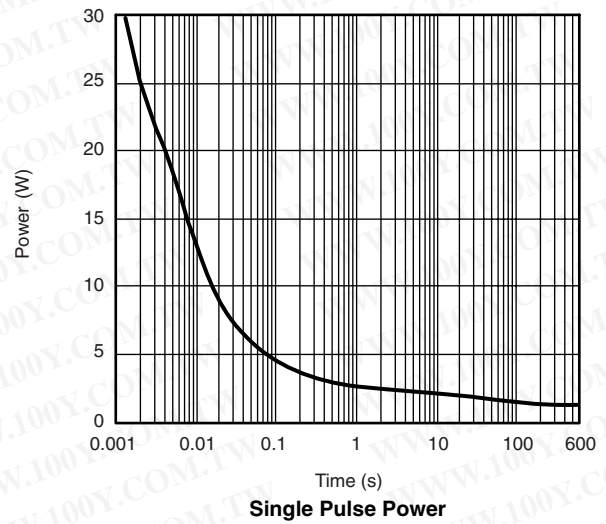
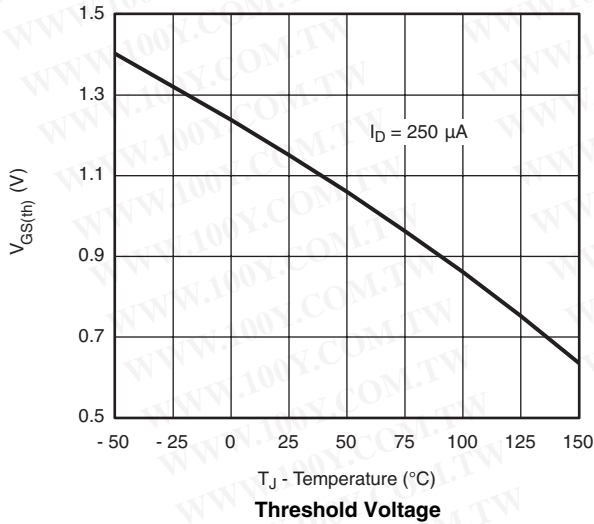
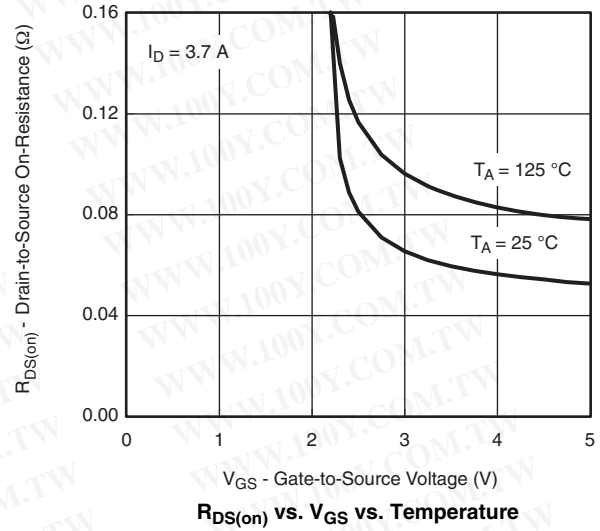
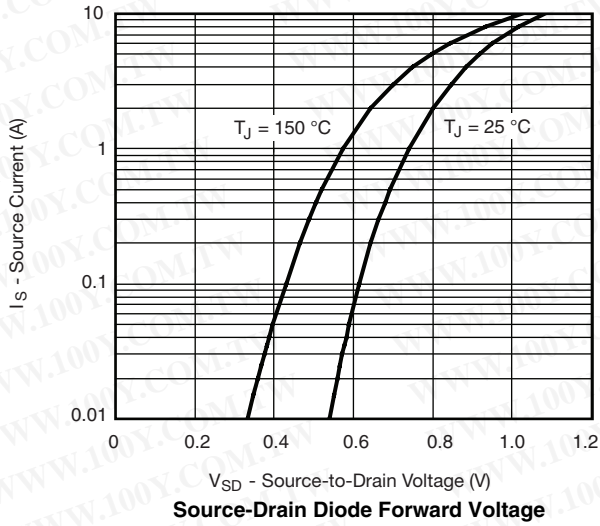
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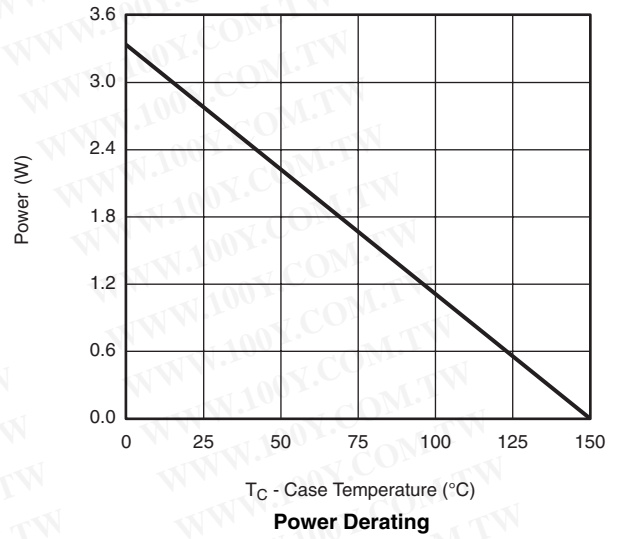
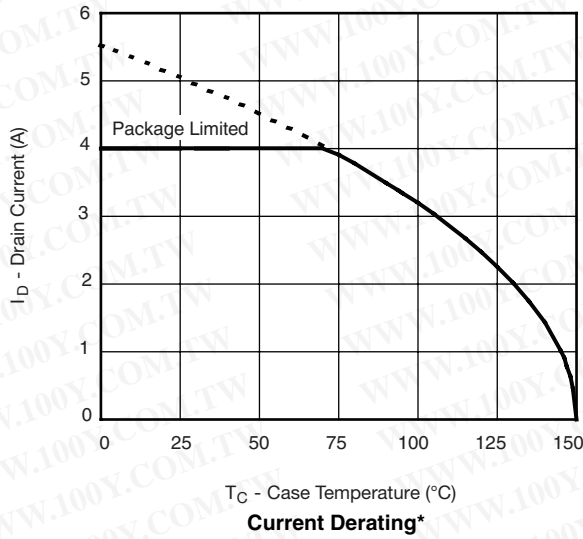


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* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

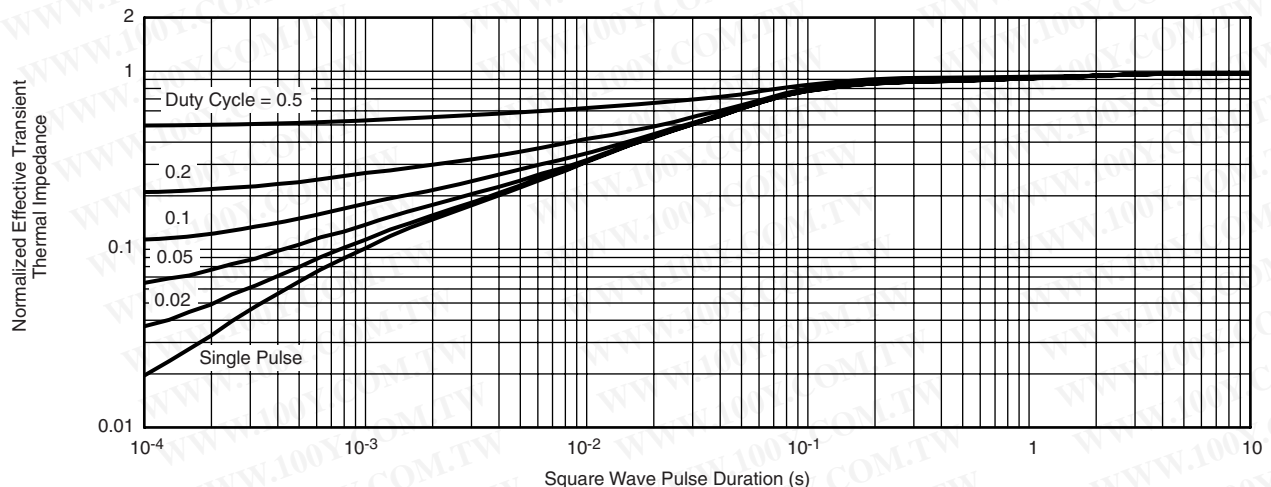
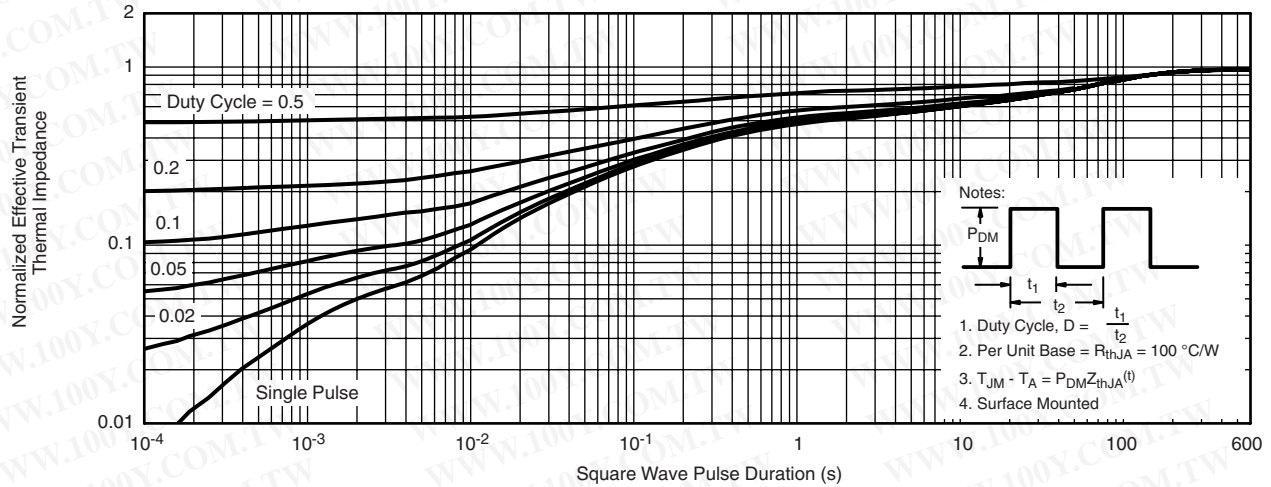
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* The power dissipation P_D is based on $T_{J(max)} = 150\text{ }^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

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