UNIKC Semiconductor

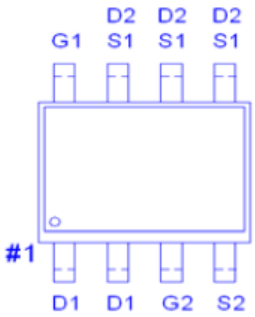
RoHS Compliant

PD1303YVS

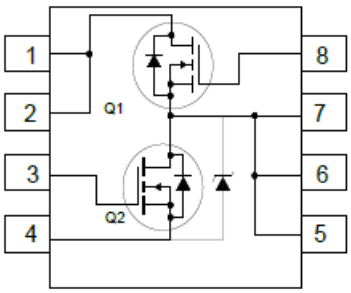
Dual N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	13mΩ @V_{GS} =10V	9A	Q1
30V	13mΩ @V_{GS} =10V	9A	Q2



SOP-8



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	Q1	30	V
			Q2	30	
Gate-Source Voltage		V_{GS}	Q1	±20	
			Q2	±20	
Continuous Drain Current[1]	T_A = 25 °C	I_D	Q1	9	A
			Q2	9	
	T_A = 70°C		Q1	7.2	
			Q2	7.2	
Pulsed Drain Current[1]		I_{DM}	Q1	21	
			Q2	21	
Avalanche Current		I_{AS}	Q1	25	
			Q2	27	
Avalanche Energy	L = 0.1mH	E_{AS}	Q1	32	mJ
			Q2	36	
Power Dissipation	T_A = 25 °C	P_D	Q1	1.7	W
			Q2		
	T_A = 70 °C		Q1	1.1	
			Q2		
Junction & Storage Temperature Range		T_j, T_{stg}		-55 to 150	°C

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL		TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$	Q1		70	°C / W
	$R_{\theta JA}$	Q2		70	

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	Q1	30			V
			Q2	30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	Q1	1	1.5	3	
			Q2	1	1.8	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	Q1			±100	nA
			Q2			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	Q1			1	μA
			Q2			30	
		V_{DS} =20V, V_{GS} = 0V, T_J = 55 °C	Q1			10	
			Q2			300	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 7A	Q1		14	18.5	mΩ
			Q2		15	18.5	
		V_{GS} = 10V, I_D = 9A	Q1		10	13	
			Q2		10	13	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 9A	Q1		28		S
			Q2		30		

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DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	Q1		1040		pF
			Q2		806		
Output Capacitance	C_{oss}		Q1		131		
			Q2		189		
Reverse Transfer Capacitance	C_{rss}		Q1		115		
			Q2		121		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q1		1.5		Ω
			Q2		2		
Total Gate Charge[2]	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 9V,	Q1		23		nC
			Q2		18		
Gate-Source Charge[2]	Q_{gs}		Q1		3.5		
			Q2		4.1		
Gate-Drain Charge[2]	Q_{gd}		Q1		5.5		
			Q2		4.7		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V, $I_D \cong$ 9A, V_{GS} = 10V, R_{GEN} = 6Ω	Q1		10		nS
			Q2		7.5		
Rise Time[2]	t_r		Q1		11		
			Q2		7.5		
Turn-Off Delay Time[2]	$t_{d(off)}$		Q1		32		
			Q2		27		
Fall Time[2]	t_f		Q1		8		
			Q2		6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current[3]	I_S		Q1			9	A
			Q2			9	
Forward Voltage[1]	V_{SD}	I_F = 9A, V_{GS} = 0V	Q1			1.3	V
			Q2			0.7	
Reverse Recovery Time	t_{rr}	I_F = 9A, dI_F/dt = 100A / μS	Q1		13		nS
			Q2		14		
Reverse Recovery Charge	Q_{rr}		Q1		3.2		nC
			Q2		3		

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

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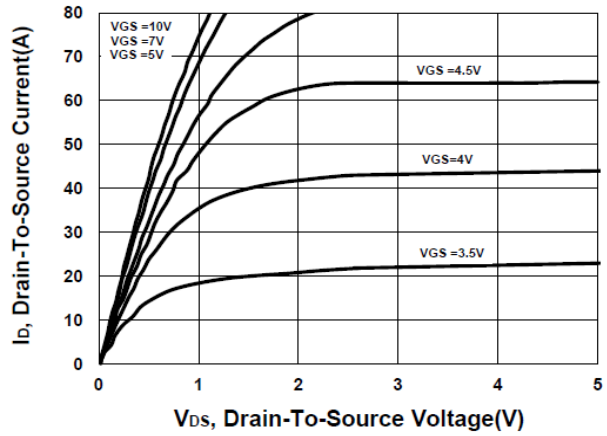
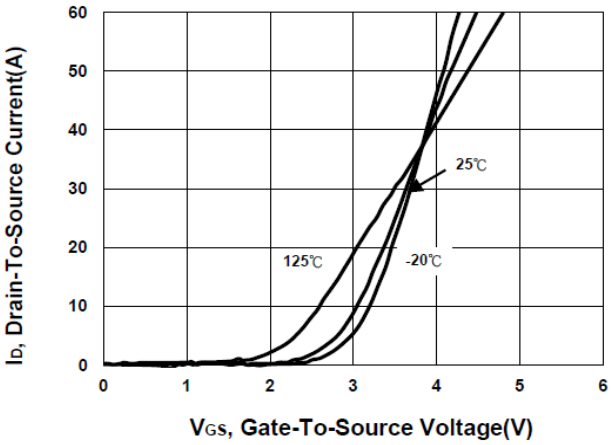
Q1

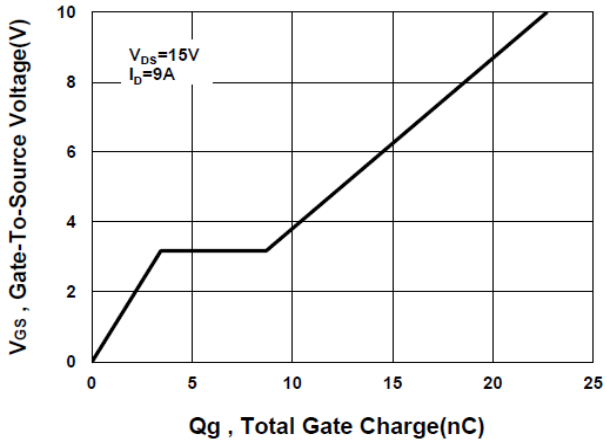
Output Characteristics



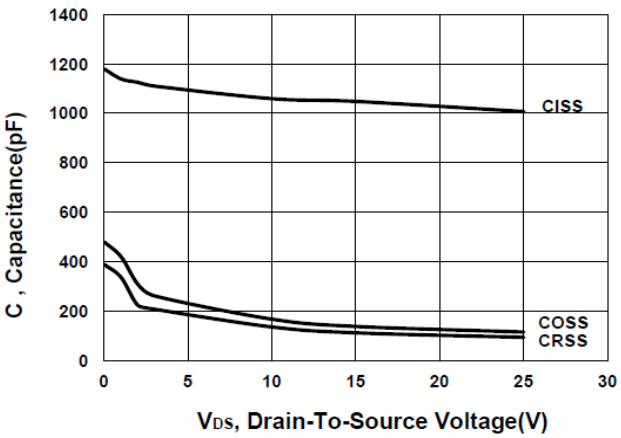
Transfer Characteristics



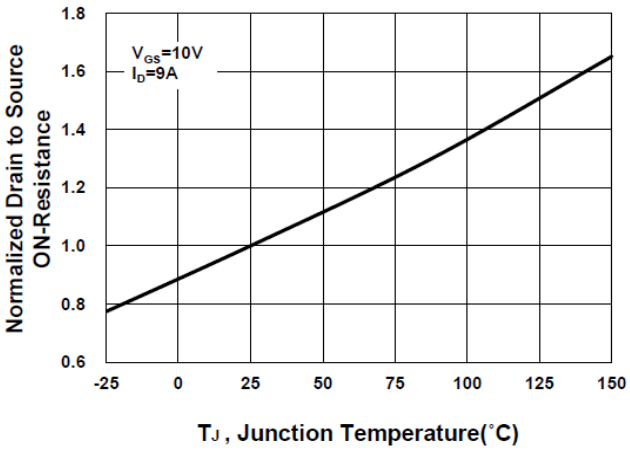
Gate charge Characteristics



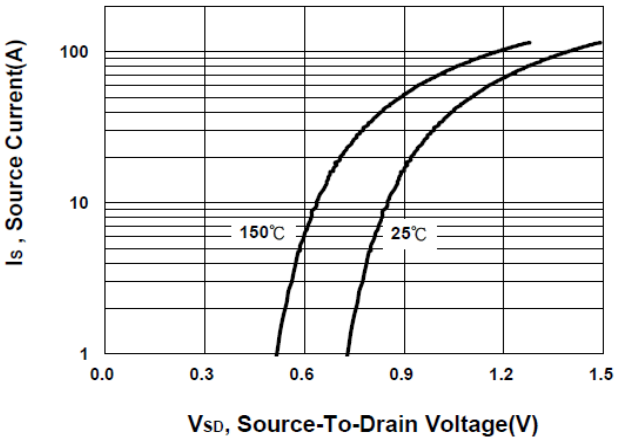
Capacitance Characteristic



On-Resistance VS Temperature



Source-Drain Diode Forward Voltage



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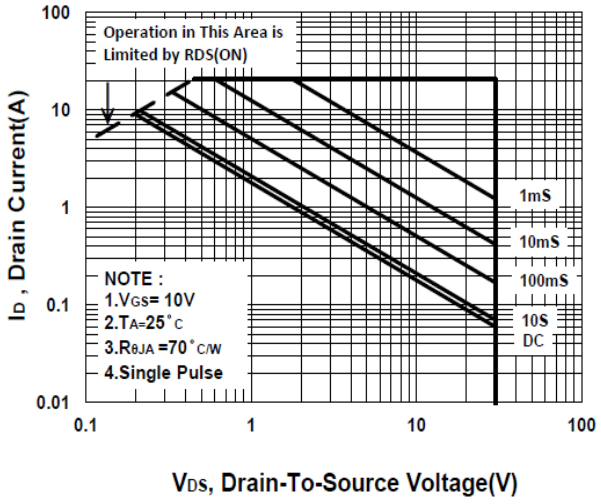
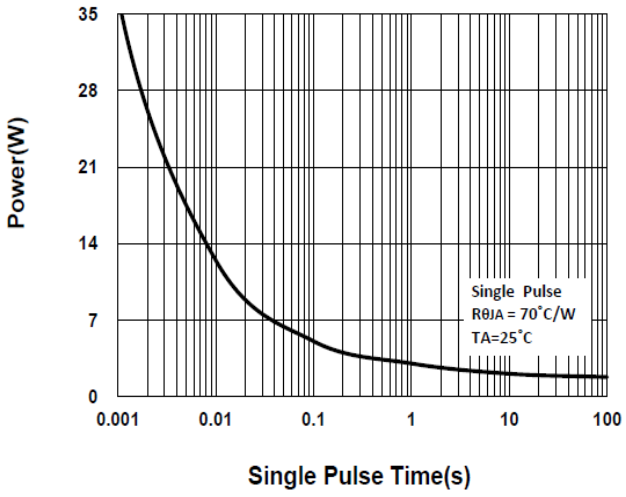
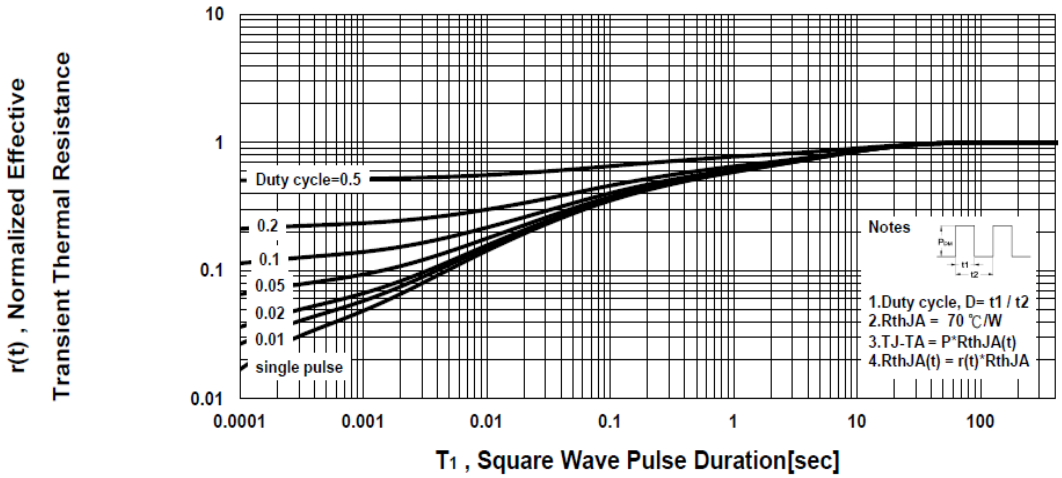
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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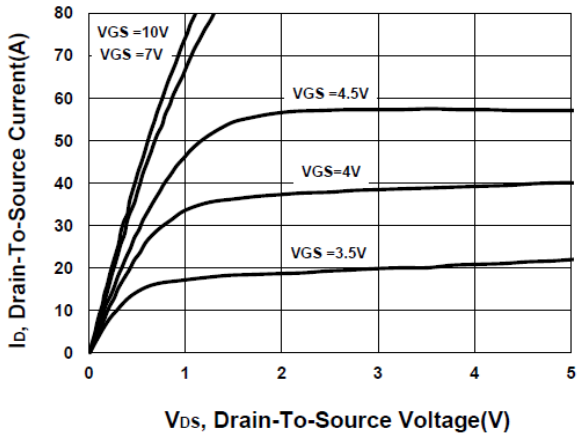
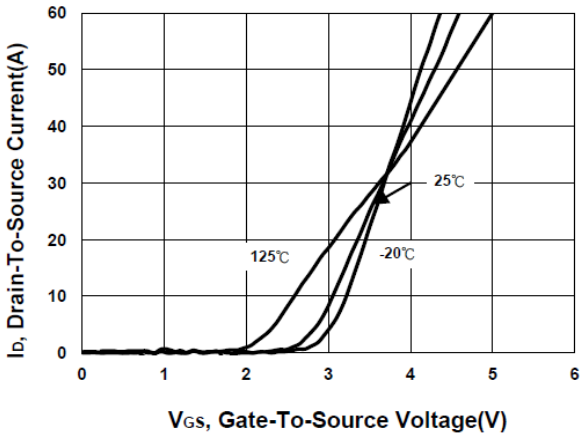
Q2

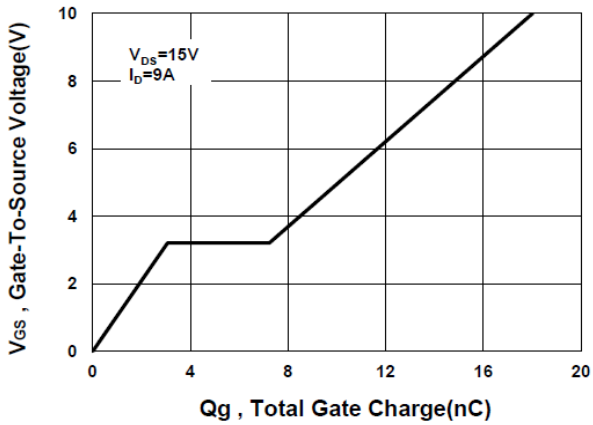
Output Characteristics



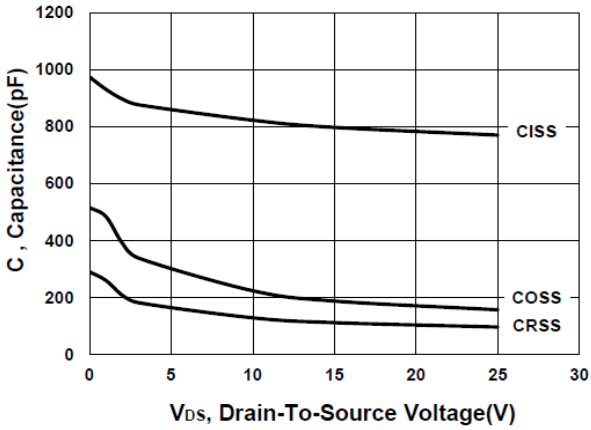
Transfer Characteristics



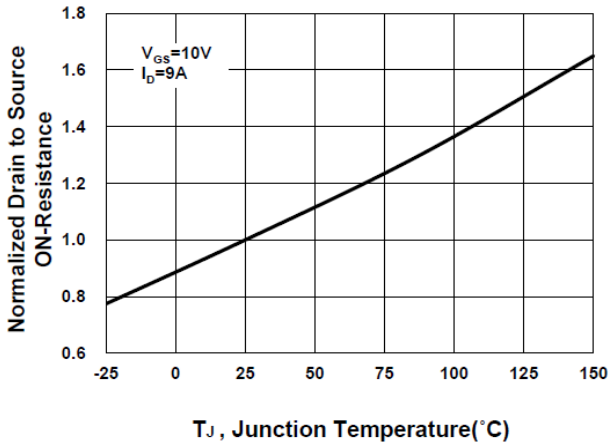
Gate charge Characteristics



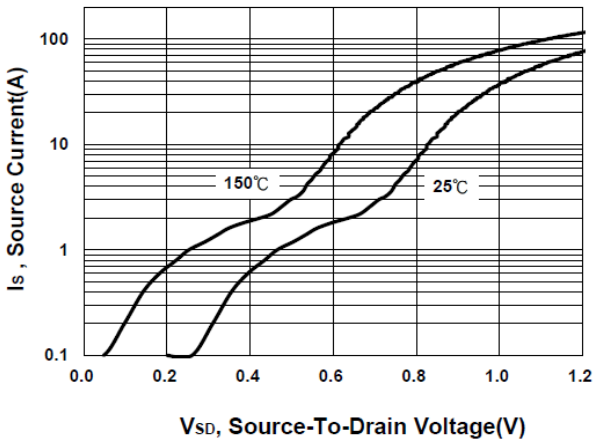
Capacitance Characteristic



On-Resistance VS Temperature



Source-Drain Diode Forward Voltage



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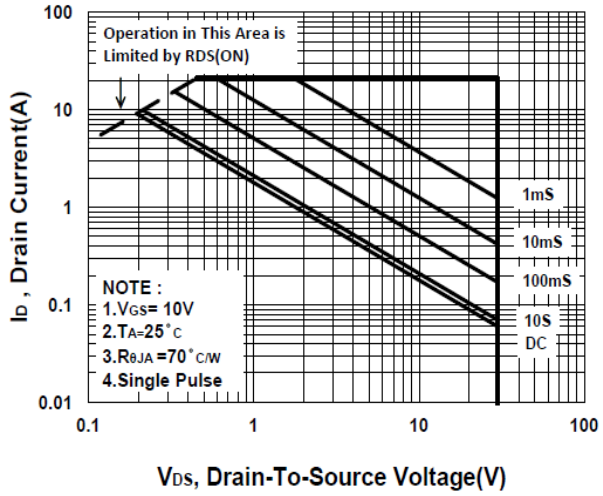

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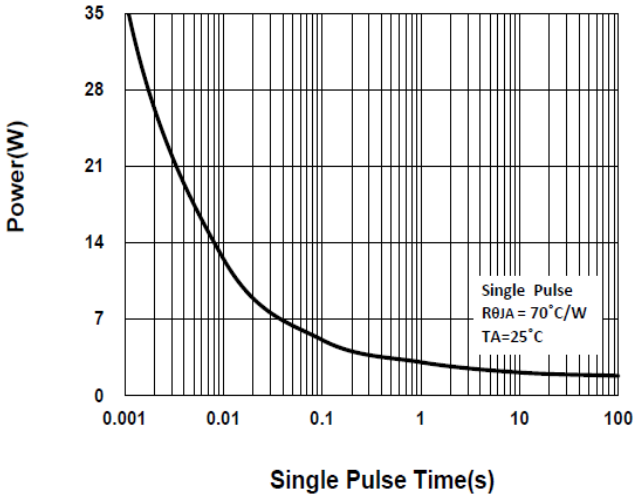
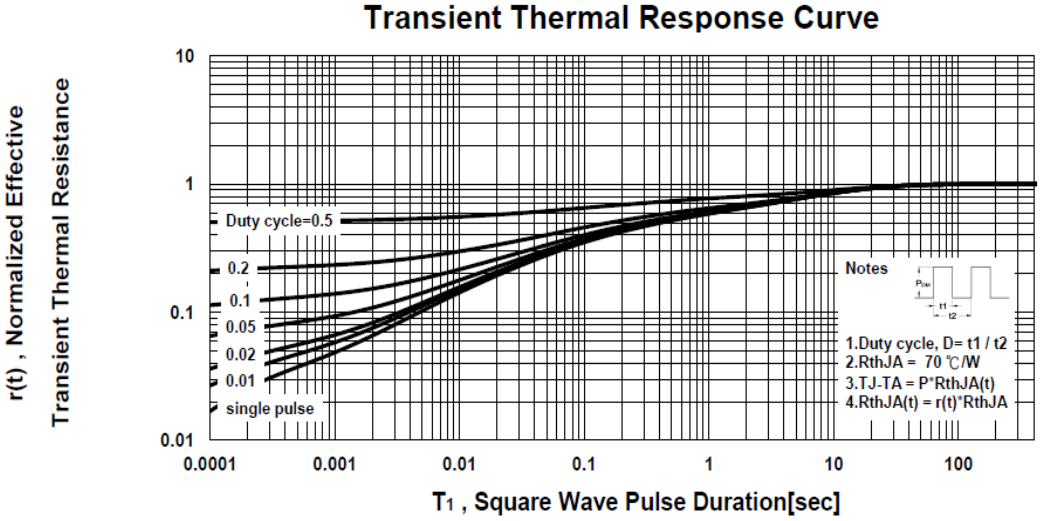


Transient Thermal Response Curve



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Package Dimension

SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.4	0.6	0.93
B	3.8	3.9	4.0	I	0.19	0.21	0.25
C	5.79	6.0	6.2	J	0.25	0.375	0.5
D	0.33	0.4	0.51	K	0°	3°	18°
E	1.25	1.27	1.29				
F	1.1	1.3	1.65				
G	0.05	0.15	0.25