UNIKC Semiconductor

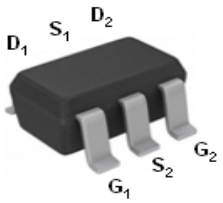
RoHS Compliant

P5803NAG

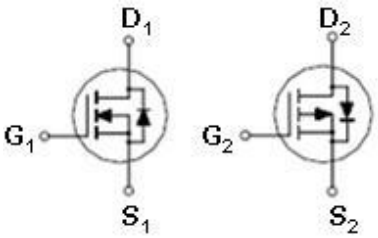
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	58mΩ @V_{GS} = 10V	3A	N
-30V	115mΩ @V_{GS} = -10V	-2A	P



TSOP- 06



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

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	N	30	V
			P	-30	
Gate-Source Voltage		V_{GS}	N	±20	
			P	±20	
Continuous Drain Current	T_A = 25 °C	I_D	N	3	A
			P	-2	
	T_A = 70 °C		N	2.3	
			P	-1.6	
Pulsed Drain Current[1]		I_{DM}	N	30	
			P	-10	
Power Dissipation	T_A = 25 °C	P_D	N	0.8	W
			P	0.8	
	T_A = 70 °C		N	0.5	
			P	0.5	
Junction & Storage Temperature Range		T_J, T_{STG}		-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	CHANNEL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$	N		160	°C / W
		P		160	

[1]Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNIT
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N	30			V
		V_{GS} = 0V, I_D = -250μA	P	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N	1.0	1.2	2.5	
		V_{DS} = V_{GS}, I_D = -250μA	P	-1.0	-1.6	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N			1	μA
		V_{DS} = -24V, V_{GS} = 0V	P			-1	
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C	N			10	
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55 °C	P			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N	30			A
		V_{DS} = -5V, V_{GS} = -10V	P	-10			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 2A	N		68	88	mΩ
		V_{GS} = -4.5V, I_D = -1.5A	P		157	185	
		V_{GS} = 10V, I_D = 3.5A	N		47	58	
		V_{GS} = -10V, I_D = -2.3A	P		96	115	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 3.5A	N		6		S
		V_{DS} = -5V, I_D = -2.3A	P		4		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	N		216		pF
			P		261		
Output Capacitance	C_{oss}		N		99		
		P-Channel V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	P		105		
Reverse Transfer Capacitance	C_{rss}		N		47		
			P		48		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 3.5A	N		6.5		nC
			P		6.5		
Gate-Source Charge[2]	Q_{gs}		N		1		
		P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -2.3A	P		1.1		
Gate-Drain Charge[2]	Q_{gd}		N		2.3		
			P		2.1		

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DYNAMIC							
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V $I_D \cong$ 3.5A, V_{GS} = 10V, R_{GEN} = 6Ω	N		7		nS
			P		7		
Rise Time[2]	t_r		N		10		
			P		10		
Turn-Off Delay Time[2]	$t_{d(off)}$	P-Channel V_{DS} = -15V $I_D \cong$ -2.3A, V_{GS} = -10V, R_{GEN} = 6 Ω	N		10		
			P		17		
Fall Time[2]	t_f		N		4		
			P		6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N			3	A
			P			-2	
Forward Voltage[1]	V_{SD}	I_F = 2.3A, V_{GS} = 0V	N			1.3	V
		I_F = -2.1A, V_{GS} = 0V	P			-1.3	
Reverse Recovery Time	t_{rr}	I_F = 3.5A, dI_F/dt = 100A / μS	N		12.7		nS
			P		12.4		
Reverse Recovery Charge	Q_{rr}	I_F = -2.3A, dI_F/dt = 100A / μS	N		6		nC
			P		5		

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

[2]Independent of operating temperature.

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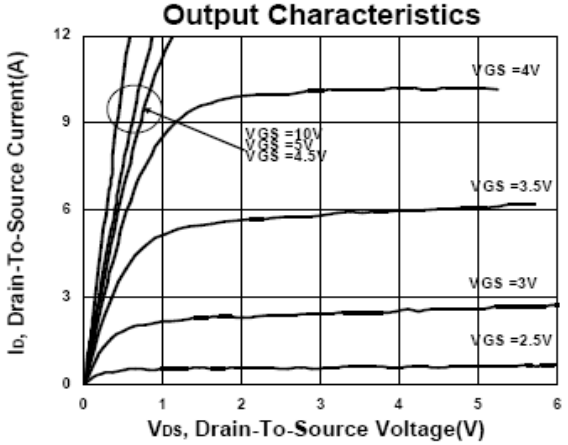
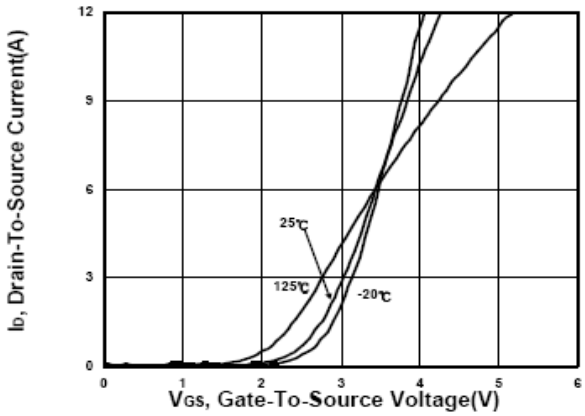
TYPICAL PERFORMANCE CHARACTERISTICS
N-CHANNEL

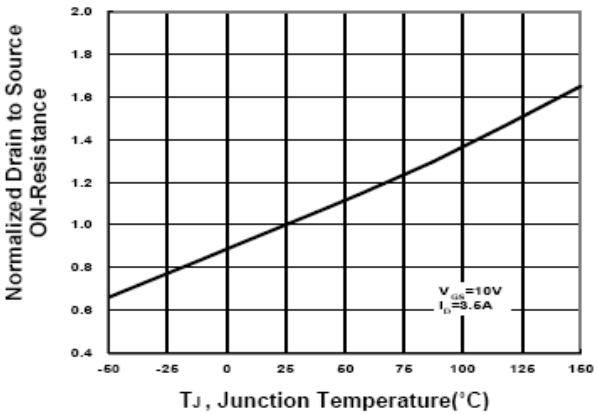
Output Characteristics



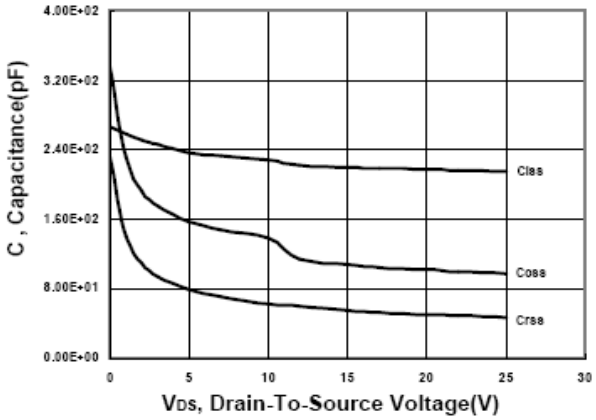
Transfer Characteristics



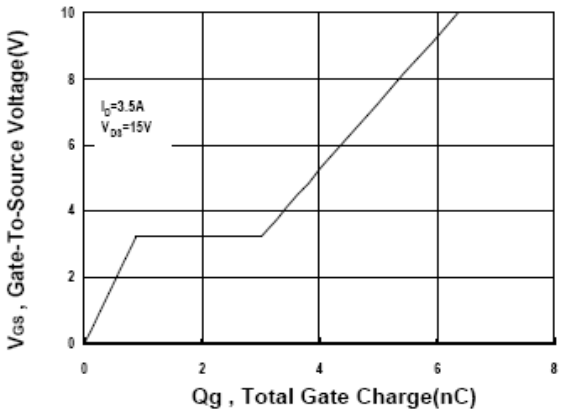
On-Resistance VS Temperature



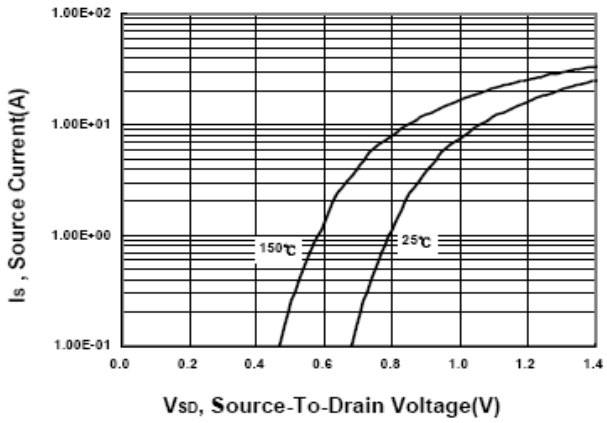
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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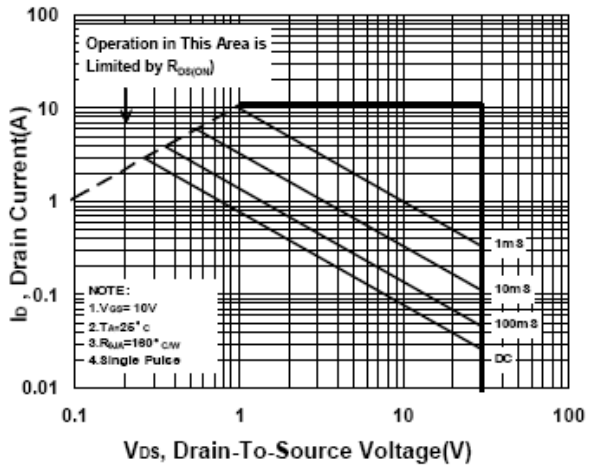
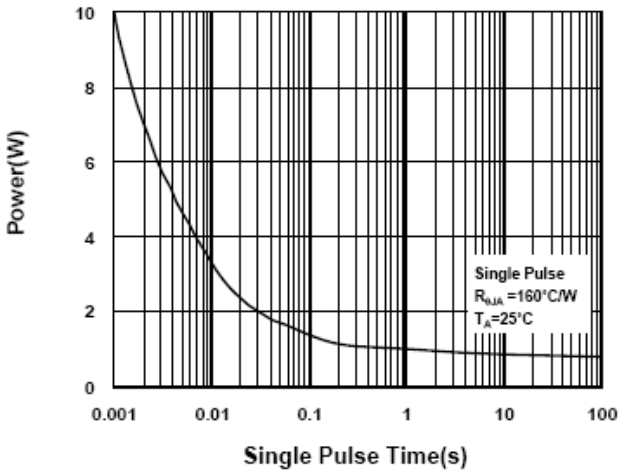
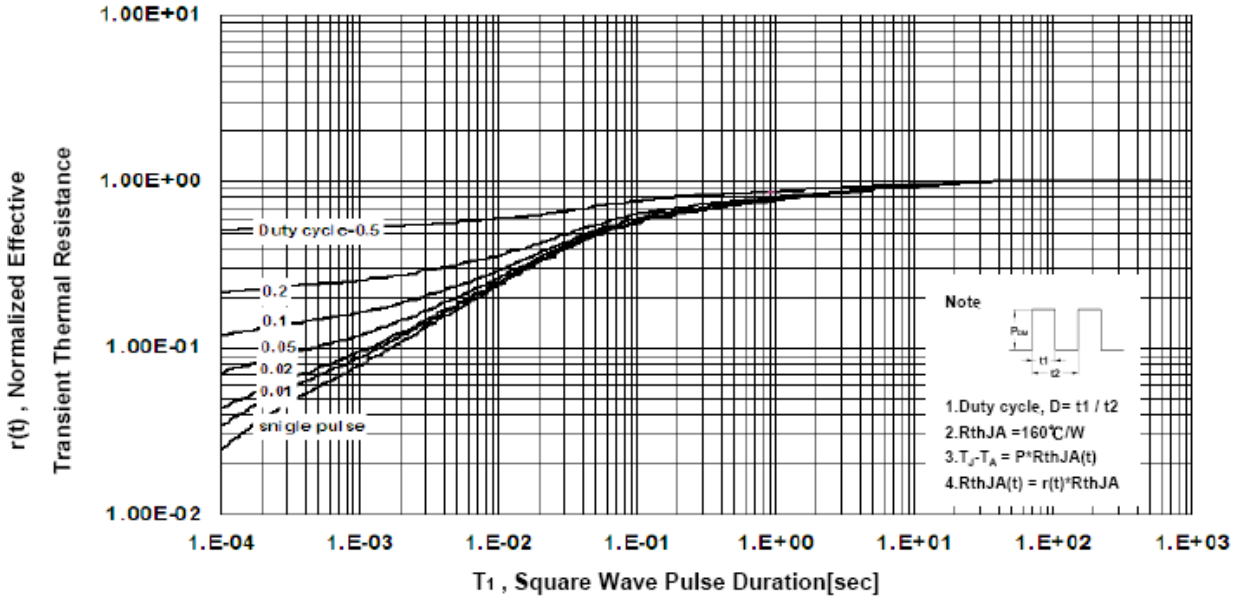
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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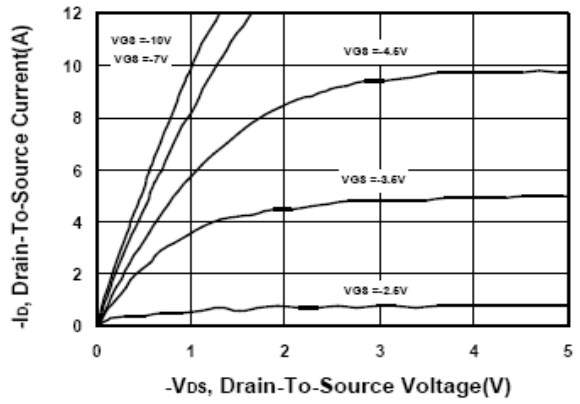
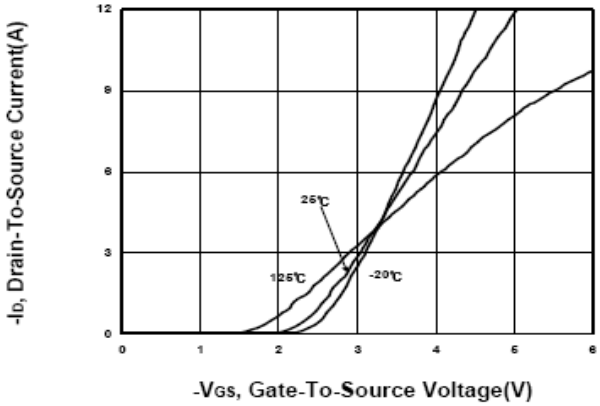
TYPICAL PERFORMANCE CHARACTERISTICS
P-CHANNEL

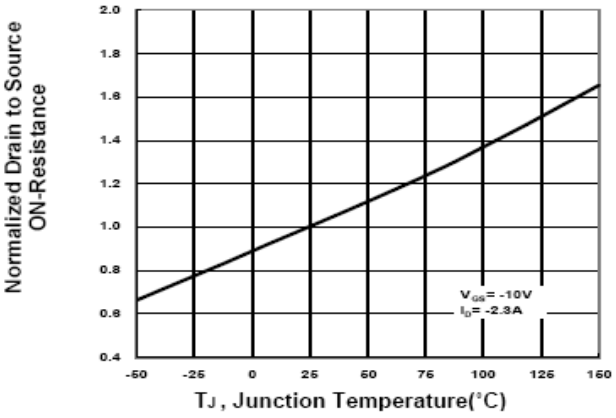
Output Characteristics



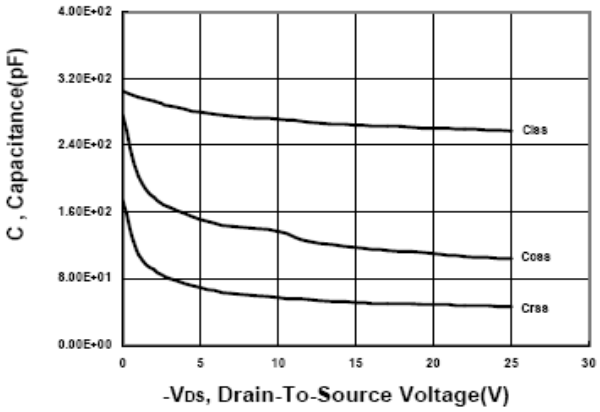
Transfer Characteristics



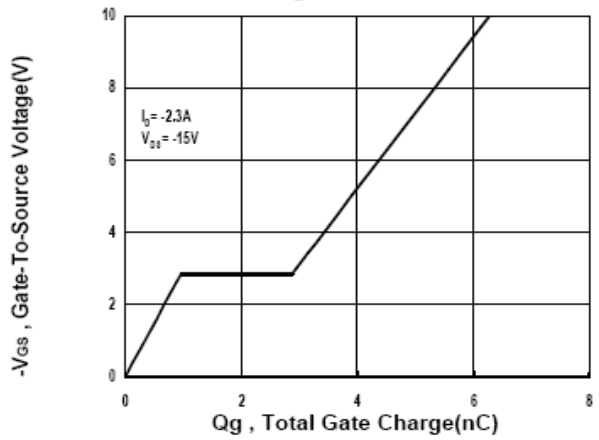
On-Resistance VS Temperature



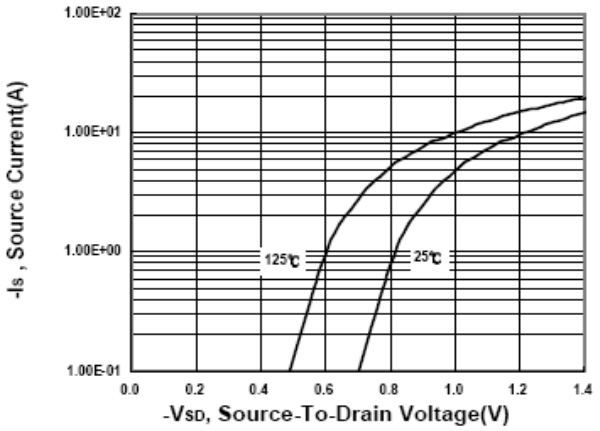
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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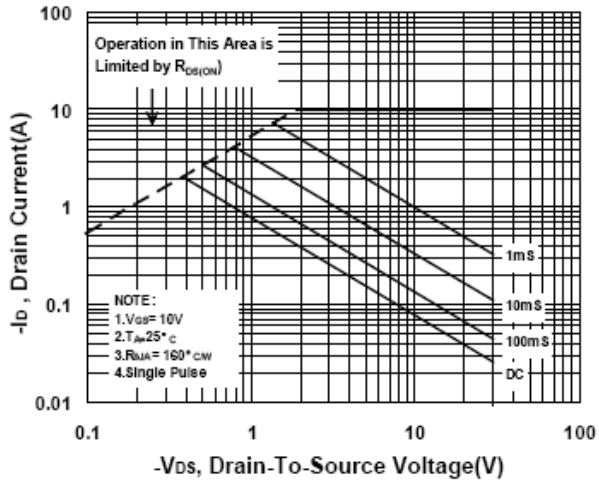
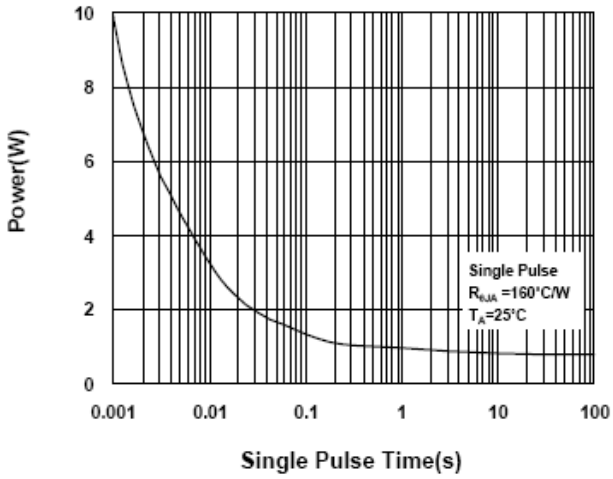


Single Pulse Maximum Power Dissipation



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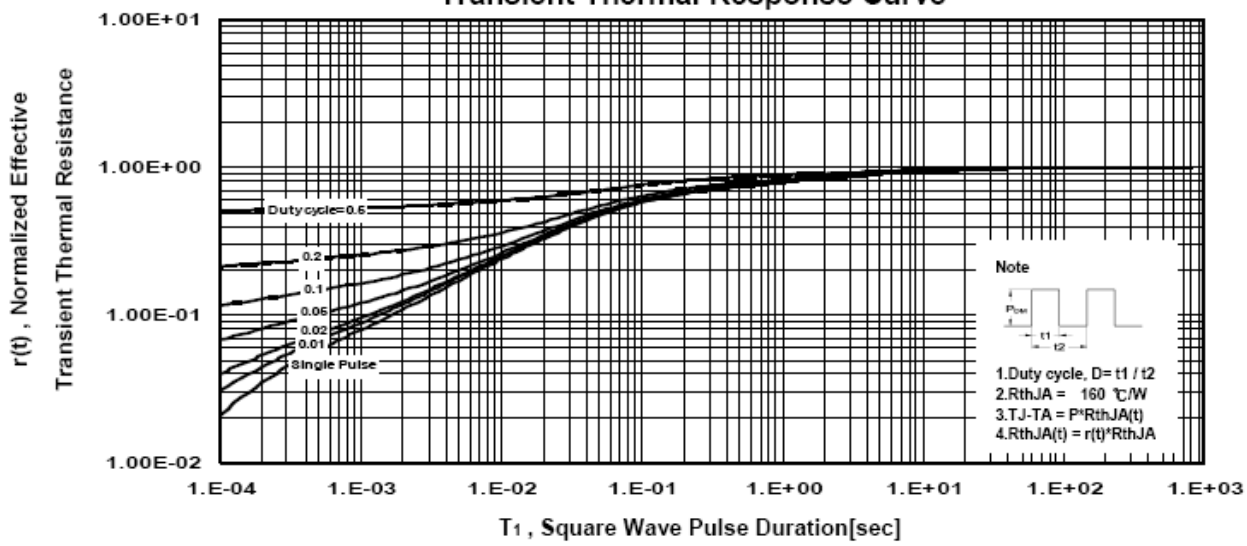

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Package Dimension

TSOP- 6 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.9		1	H	0.08		0.2
B	2.6		3	I	0.33		0.57
C	1.5		1.7	J			
D	2.8		3.02	K			
E	0.7		0.85	L			
F	0		0.1	M			
G	0.35		0.5	N