UNIKC Semiconductor

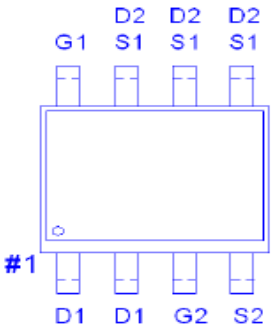
RoHS Compliant

PD1503YVS-A

Dual N- Channel Enhancement Mode MOSFET

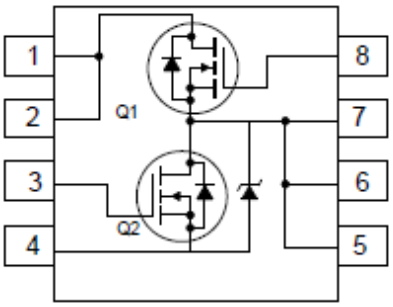
PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	30V	15.5mΩ @V_{GS} = 10V	9A
Q1	30V	18mΩ @V_{GS} = 10V	8A



G : GATE
D : DRAIN
S : SOURCE

SOP-8



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

PARAMETERS/TEST CONDITIONS		SYMBOL	Q2	Q1	UNITS
Drain-Source Voltage		V_{DS}	30	30	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	9	8	A
	T_A = 70 °C		7	6	
Pulsed Drain Current[1]		I_{DM}	35	30	
Avalanche Current		I_{AS}	29	21	
Avalanche Energy	L =0.1mH	E_{AS}	42	24	mJ
Power Dissipation	T_A = 25 °C	P_D	2		W
	T_A = 70 °C		1.28		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

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

PARAMETERS/TEST CONDITIONS		SYMBOL	Schottky	UNITS
Reverse Current	V_R = 25V	I_R	0.05	mA
Forward Voltage	I_F = 1A	V_F	0.45	V

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W

[1]Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNITS
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	Q2	30			V
			Q1	30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	Q2	1	1.7	3	
			Q1	1	1.8	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	Q2			±100	nA
			Q1			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =24V, V_{GS} = 0V	Q2			1	μA
			Q1			-1	
		V_{DS} =20V, V_{GS} = 0V, T_J = 125 °C	Q2			10	
			Q1			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	Q2	35			A
			Q1	30			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 7A	Q2		14	19	mΩ
		V_{GS} =10V, I_D = 9A			11	15.5	
		V_{GS} = 4.5V, I_D = 6A	Q1		24	30	
		V_{GS} = 10V, I_D = 7A			14	18	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 9A	Q2		25		S
		V_{GS} = 10V, I_D = 7A	Q1		15		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	Q2		1000		pF
			Q1		580		
Output Capacitance	C_{oss}		Q2		295		
			Q1		160		
Reverse Transfer Capacitance	C_{rss}		Q2		130		
			Q1		90		

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Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q2		1.5		Ω
			Q1		2.1		
Total Gate Charge[2]	Q_g (V_{GS}=10V)	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 9A	Q2		21		nC
			Q1		11		
Total Gate Charge[2]	Q_g (V_{GS}=4.5V)		Q2		9		
			Q1		5.5		
Gate-Source Charge[2]	Q_{gs}		Q2		3.6		
			Q1		2.5		
Gate-Drain Charge[2]	Q_{gd}		Q2		3.4		
			Q1		2.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V, I_D ≅1A, V_{GS} = 10V, R_{GEN} = 6Ω	Q2		19		nS
			Q1		20		
Rise Time[2]	t_r		Q2		13		
			Q1		8		
Turn-Off Delay Time[2]	$t_{d(off)}$		Q2		42		
			Q1		38		
Fall Time[2]	t_f		Q2		8		
			Q1		6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		Q2			2.8	A
			Q1			2	
Forward Voltage[1]	V_{SD}	Q2:I_F = 9A, V_{GS} = 0V	Q2			0.7	V
		Q1:I_F = 7A, V_{GS} = 0V	Q1			1	
Reverse Recovery Time	t_{rr}	Q2:I_F = 9A,dI_F/dt = 100 A/μs Q1:I_F = 7A,dI_F/dt = 100 A/μs	Q2		15		nS
			Q1		20		
Reverse Recovery Charge	Q_{rr}		Q2		6		nC
			Q1		12		

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

[2]Independent of operating temperature.

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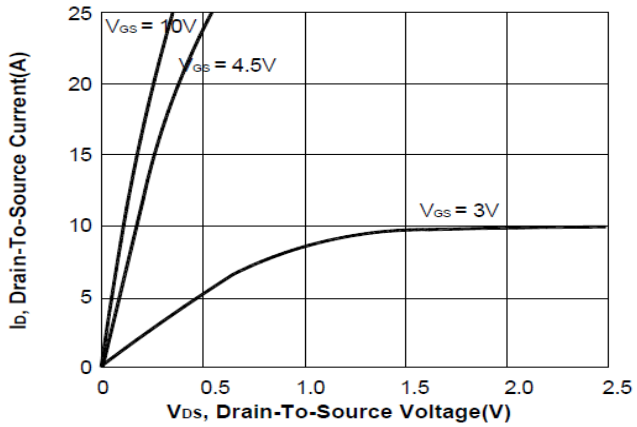
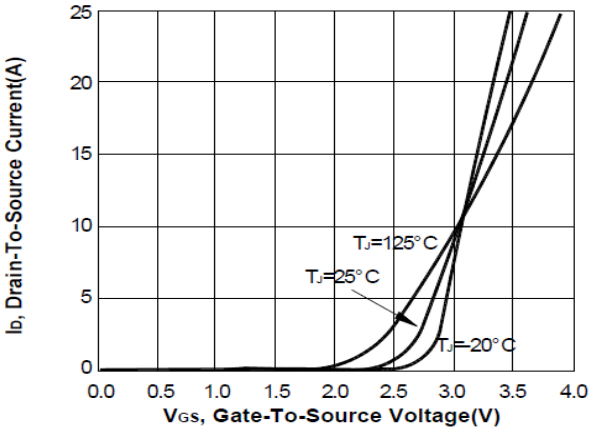
Typical Characteristics: Q2

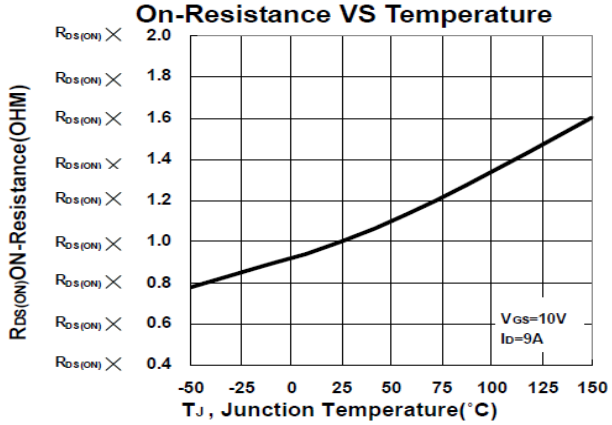
Output Characteristics



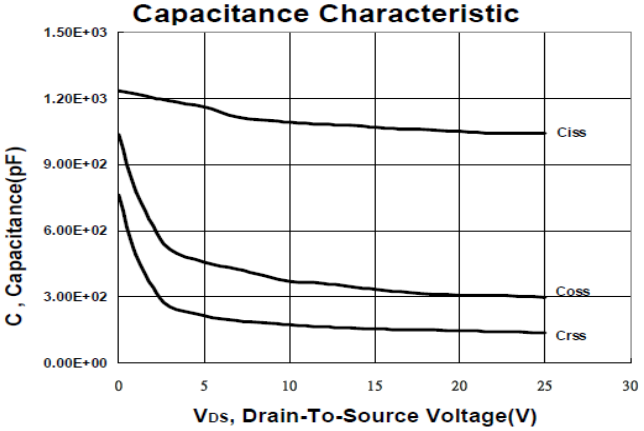
Transfer Characteristics



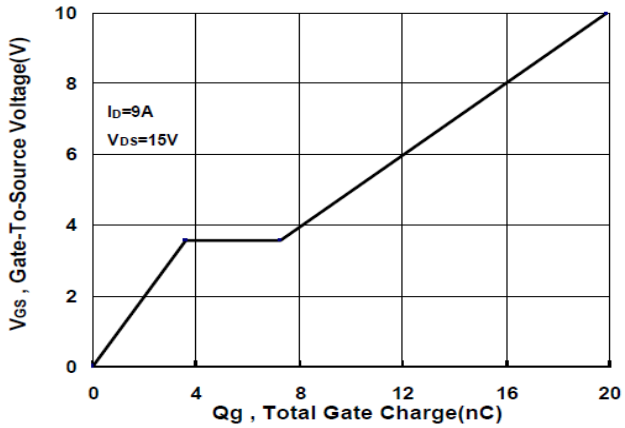
On-Resistance VS Temperature



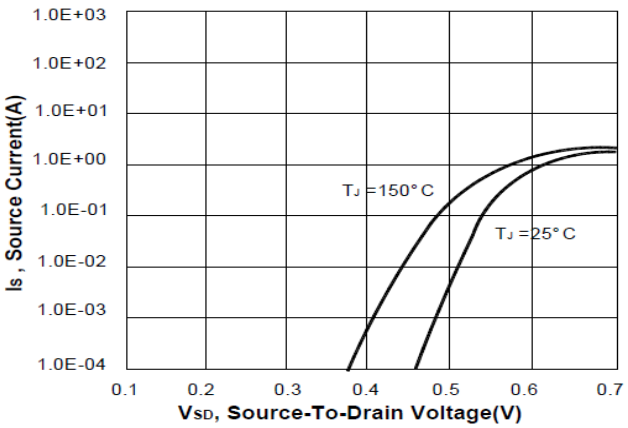
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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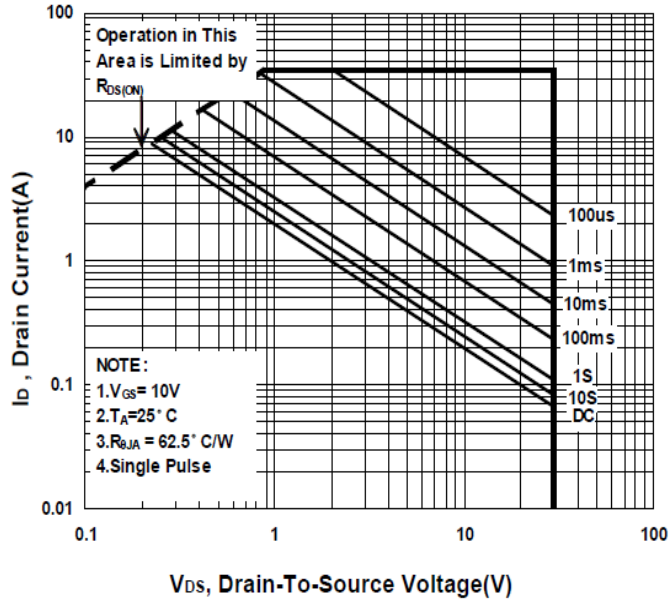
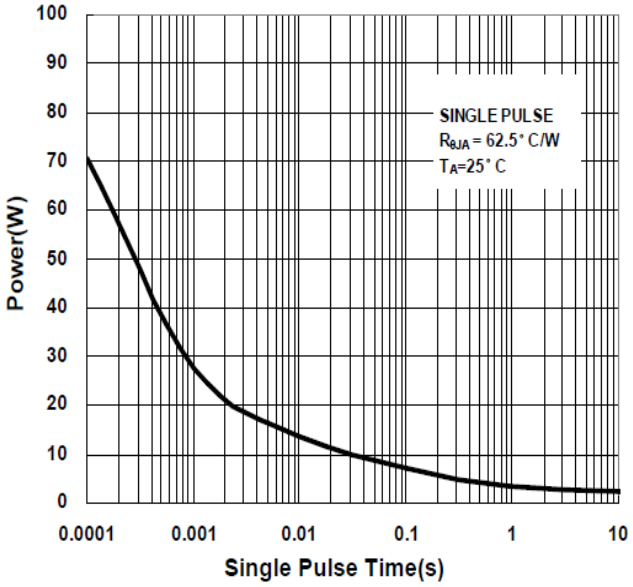
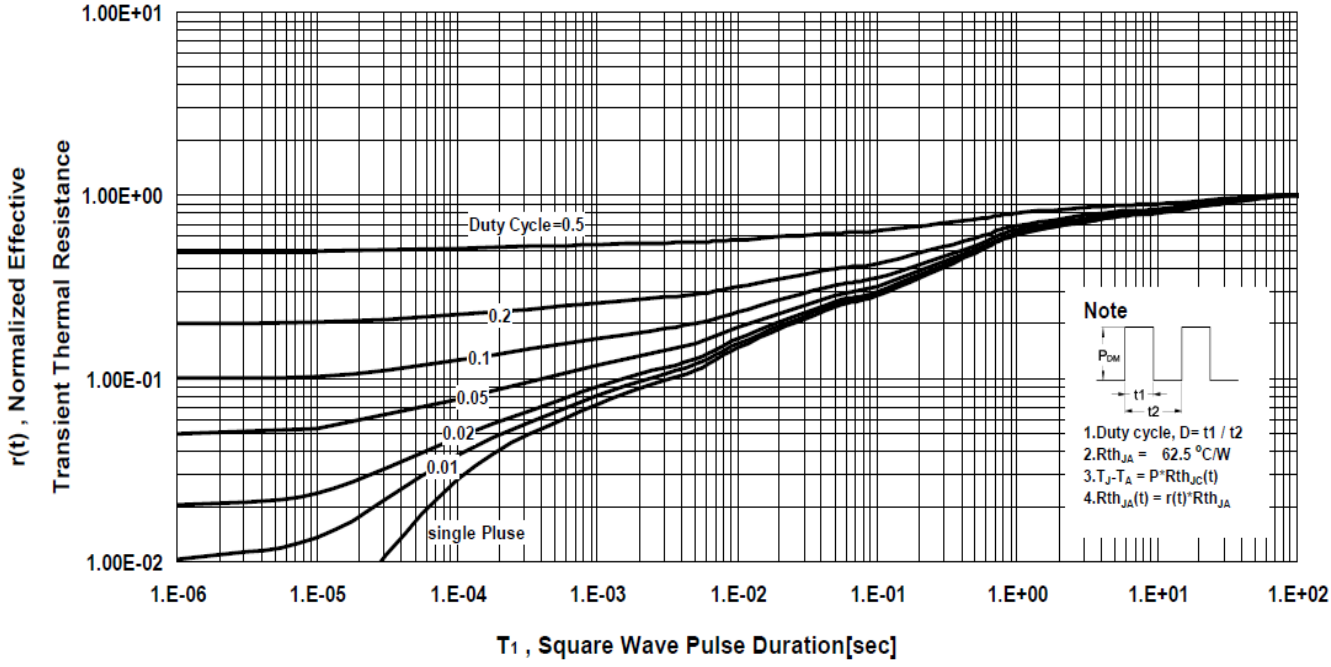
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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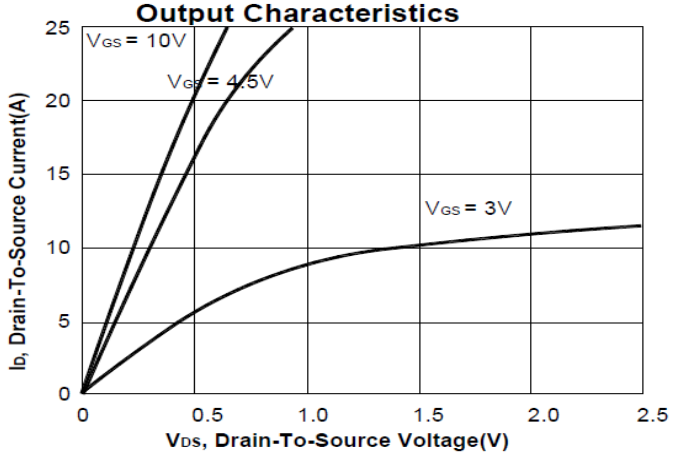
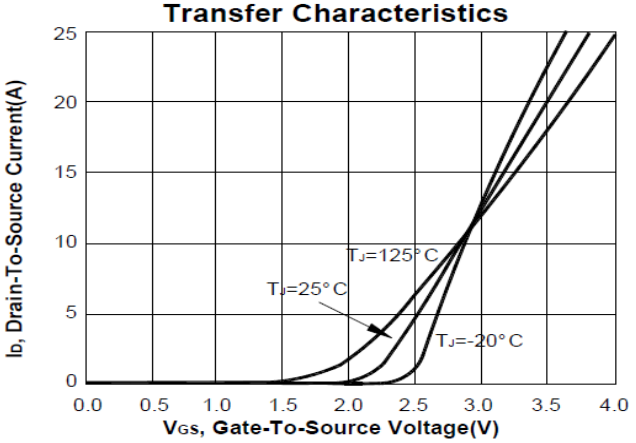
Typical Characteristics: Q1

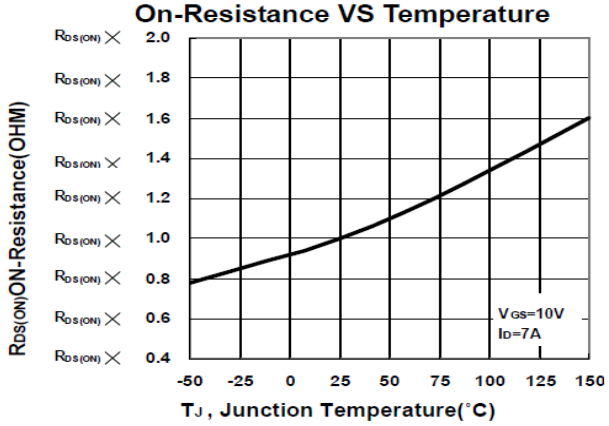
Output Characteristics



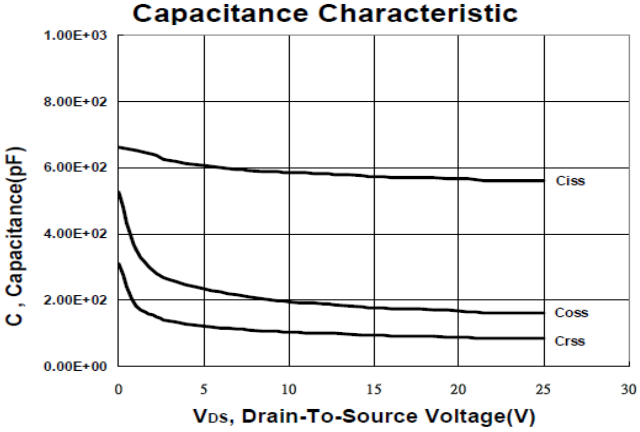
Transfer Characteristics



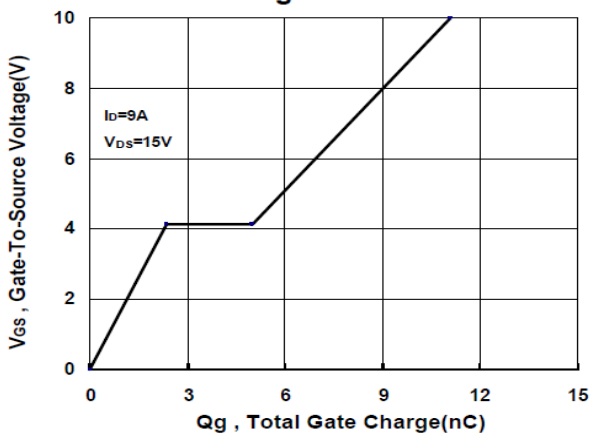
On-Resistance VS Temperature



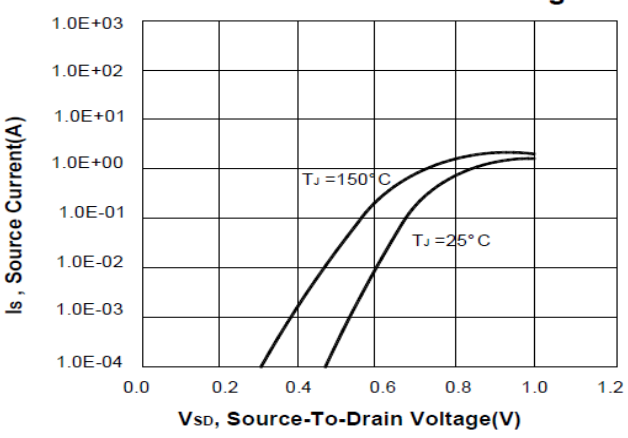
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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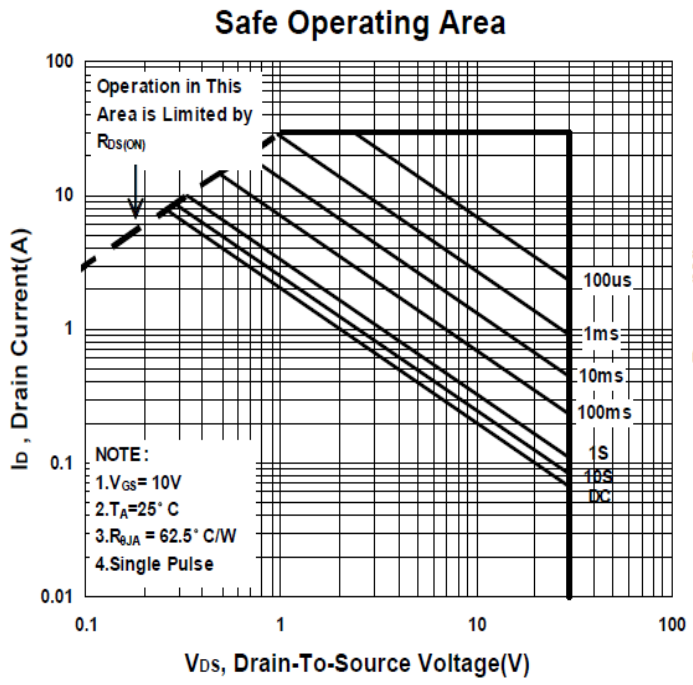

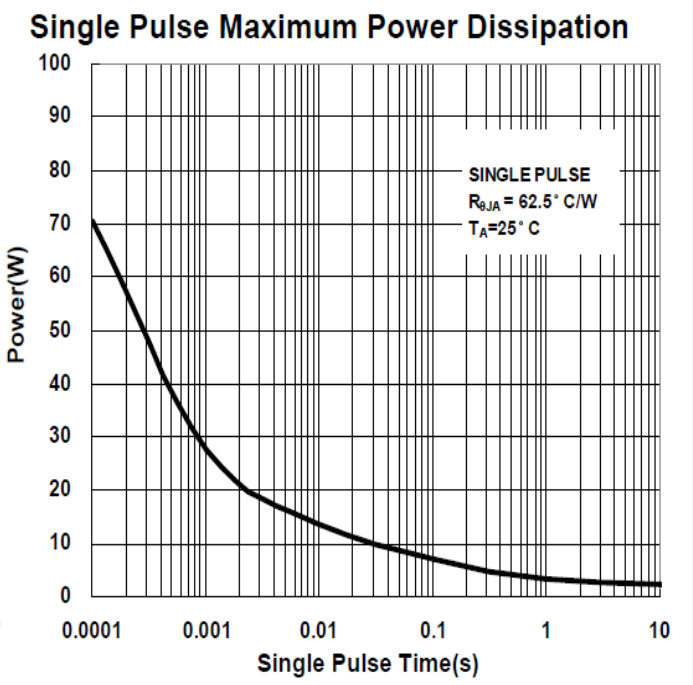

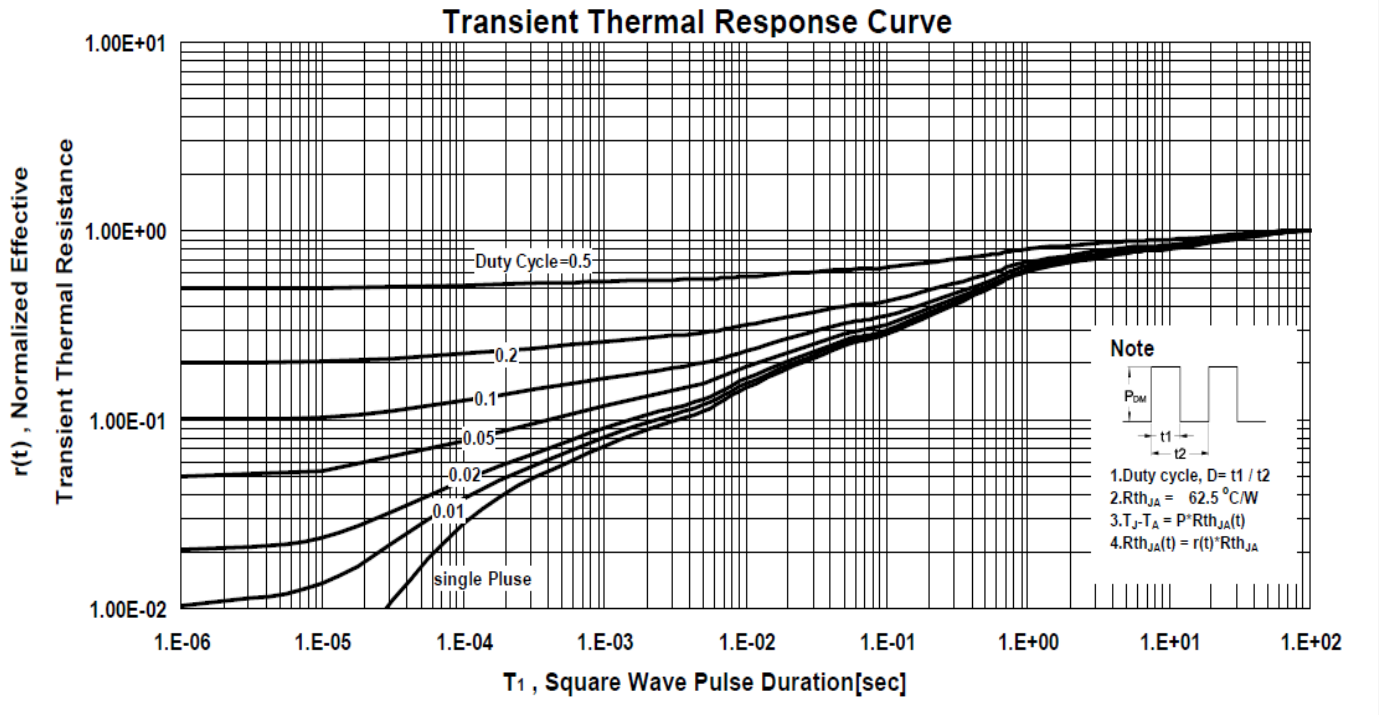

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Package Dimension

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