UNIKC Semiconductor

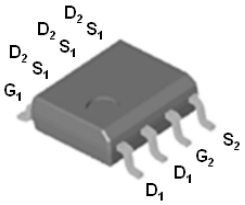
RoHS Compliant

PD1503YVS

Dual N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	30V	15.8mΩ @V_{GS} = 10V	9A
Q1	30V	21.0mΩ @V_{GS} = 10V	8A



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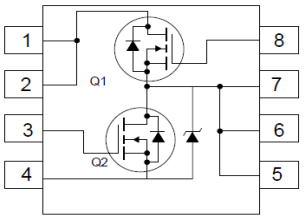

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	Q2	Q1	UNITS
Drain-Source Voltage		V_{DS}	30	30	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current[2]	T_A = 25 °C	I_D	9	8	A
	T_A = 70 °C		7	6	
Pulsed Drain Current[1, 2]		I_{DM}	35	30	
Avalanche Current		I_{AS}	29	21	
Avalanche Energy	L = 0.1mH	E_{AS}	43	23	mJ
Power Dissipation	T_A = 25 °C	P_D	2		W
	T_A = 70 °C		1.28		
Operating Junction & Storage Temperature Range		T_J, T_{STG}	**-55 to 150**		°C

ABSOLUTE MAXIMUM RATINGS (T_A = 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

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.

[2]Limited only by maximum temperature allowed

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Q2 ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.7	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V , T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	35			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 7A		14.2	20	mΩ
		V_{GS} = 10V, I_D = 9A		10.5	15.8	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 9A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		1040		pF
Output Capacitance	C_{oss}			295		
Reverse Transfer Capacitance	C_{rss}			139		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 9A, V_{GS} = 10V		20		nC
Gate-Source Charge[2]	Q_{gs}			3.8		
Gate-Drain Charge[2]	Q_{gd}			4.3		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 15V, I_D = 1A, V_{GS} = 10V, R_G=6Ω		18		nS
Rise Time[2]	t_r			12		
Turn-Off Delay Time[2]	$t_{d(off)}$			40		
Fall Time[2]	t_f			8		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				2.8	V
Forward Voltage[1]	V_{SD}	I_F = 9A, V_{GS} = 0V			0.7	V
Reverse Recovery Time	t_{rr}	I_F = 9A, dI_F/dt = 100A / μS		15		nS
Reverse Recovery Charge	Q_{rr}			6		nC

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

[2]Independent of operating temperature.

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Q1 ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	2	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V , T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	30			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A		25.6	32	mΩ
		V_{GS} = 10V, I_D = 7A		15.8	21	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 7A		15		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		560		pF
Output Capacitance	C_{oss}			160		
Reverse Transfer Capacitance	C_{rss}			84		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 7A, V_{GS} = 10V		11		nC
Gate-Source Charge[2]	Q_{gs}			2.5		
Gate-Drain Charge[2]	Q_{gd}			3.1		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 15V, I_D = 1A, V_{GS} = 10V,R_G=6Ω		19		nS
Rise Time[2]	t_r			8		
Turn-Off Delay Time[2]	$t_{d(off)}$			39		
Fall Time[2]	t_f			6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				2	V
Forward Voltage[1]	V_{SD}	I_F = 7A, V_{GS} = 0V			1	V
Reverse Recovery Time	t_{rr}	I_F = 7A, dI_F/dt = 100A / μS		20		nS
Reverse Recovery Charge	Q_{rr}			12		nC

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

[2]Independent of operating temperature.

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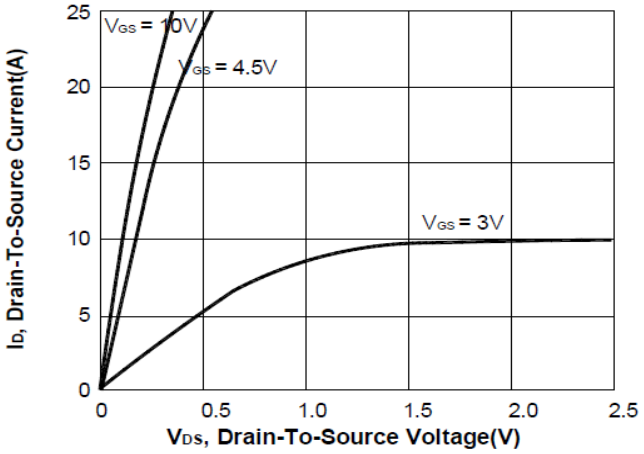
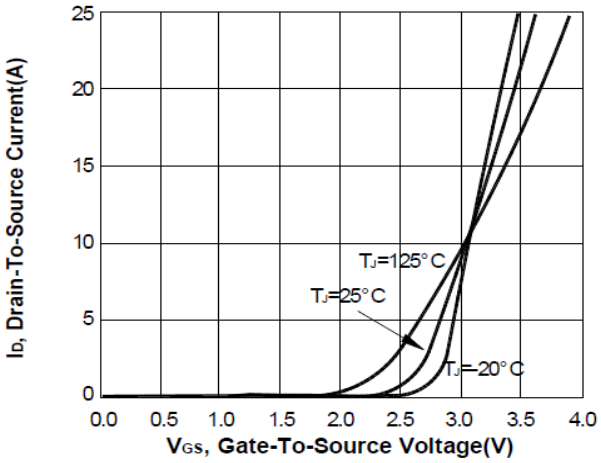
Typical Characteristics: Q2

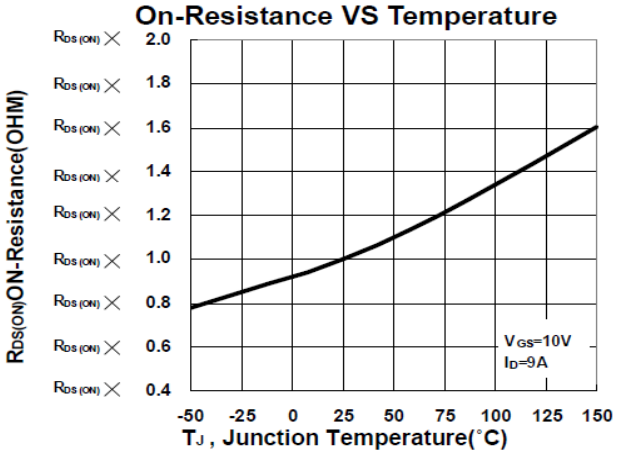
Output Characteristics



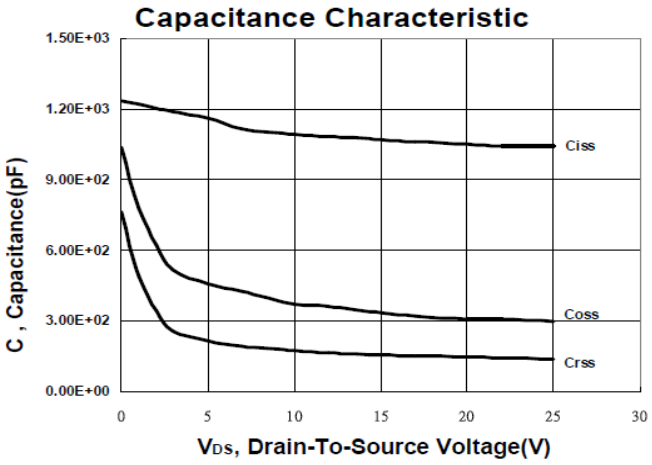
Transfer Characteristics



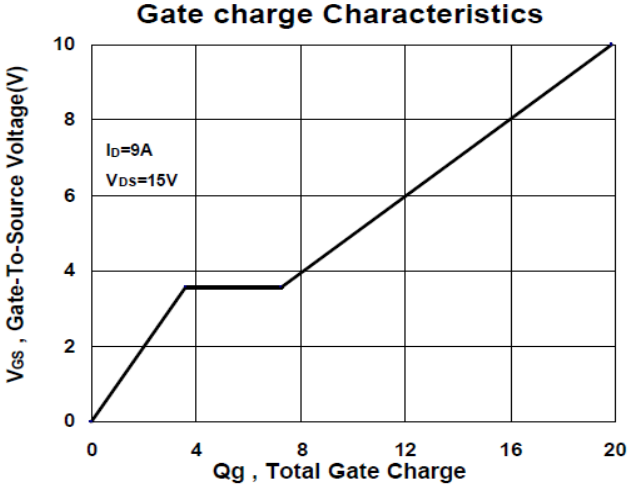
On-Resistance VS Temperature



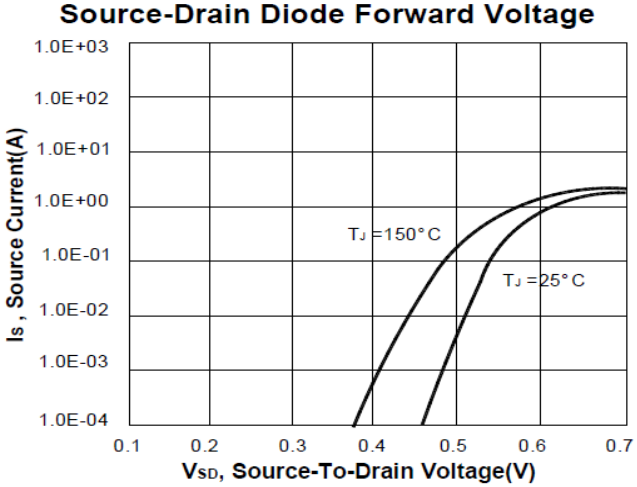
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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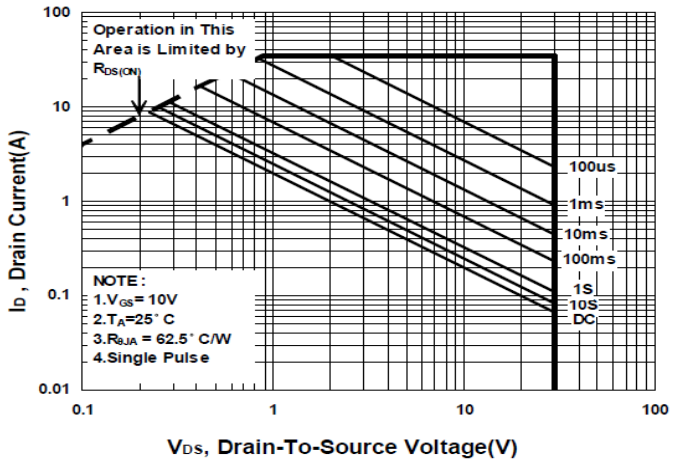
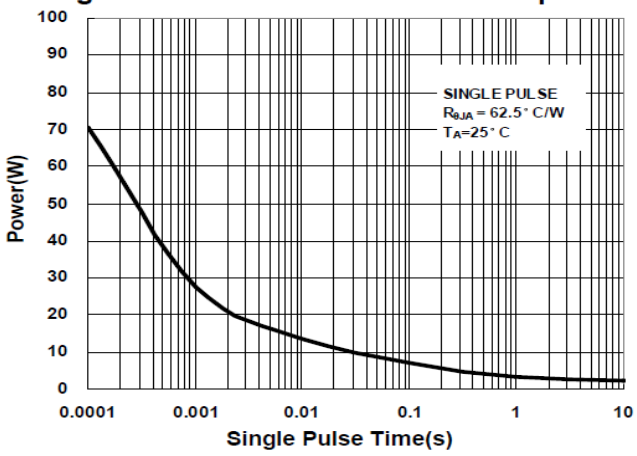
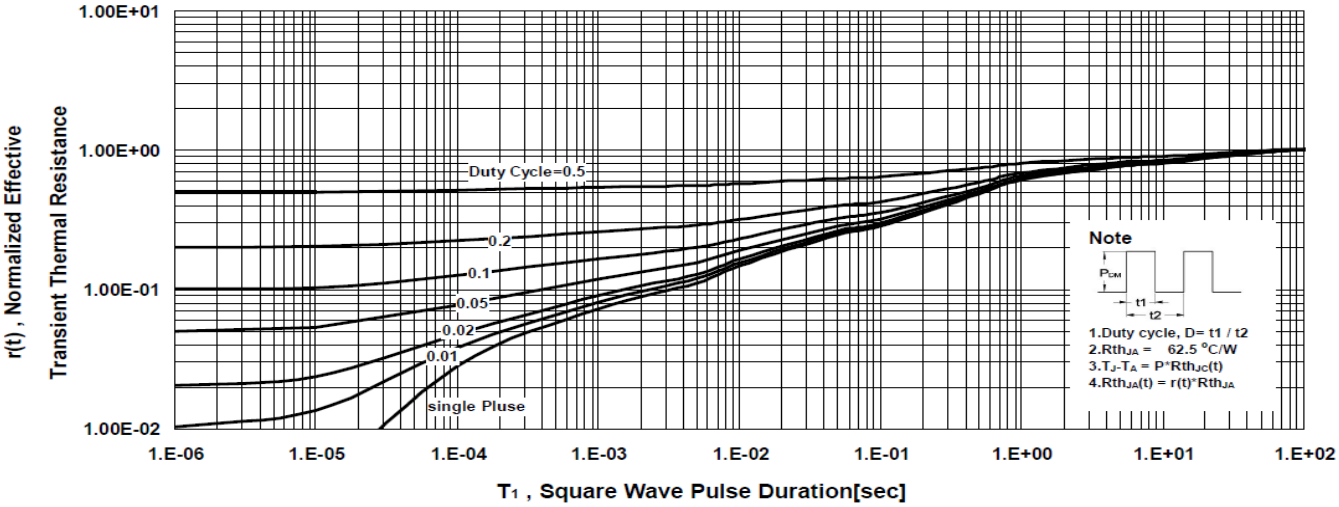
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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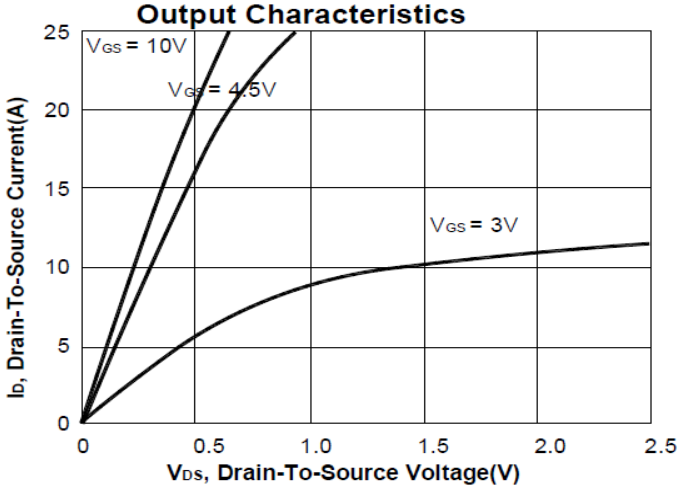
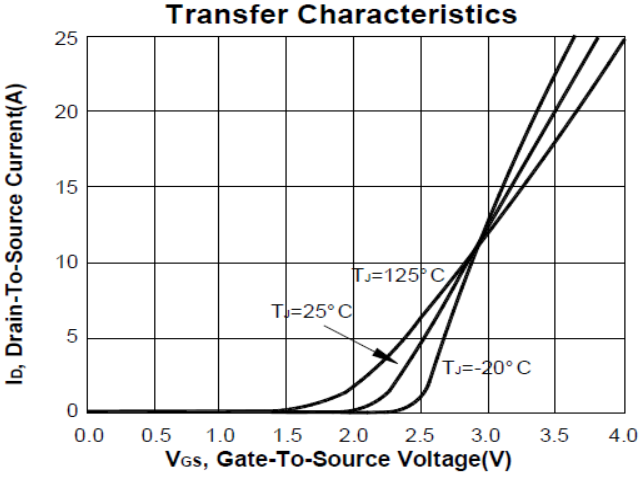
Typical Characteristics: Q1

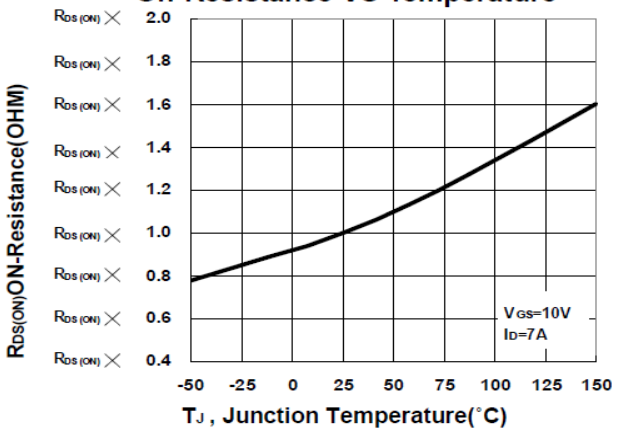
Output Characteristics



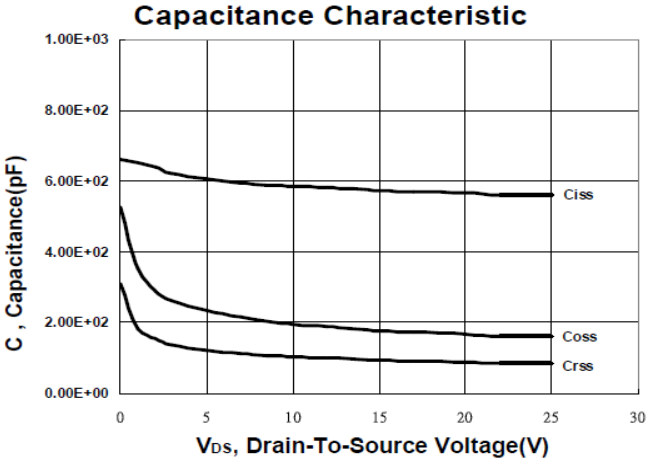
Transfer Characteristics



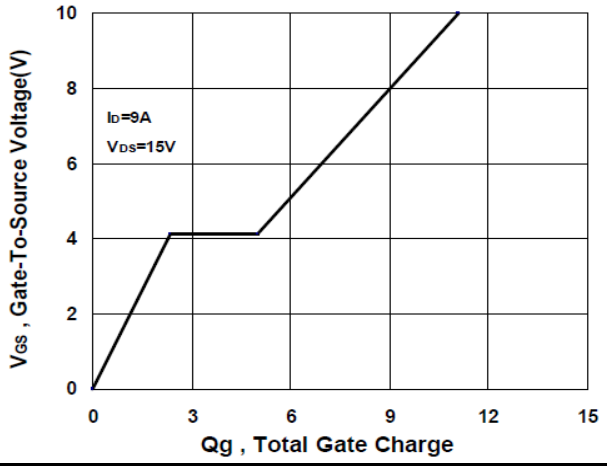
On-Resistance VS Temperature



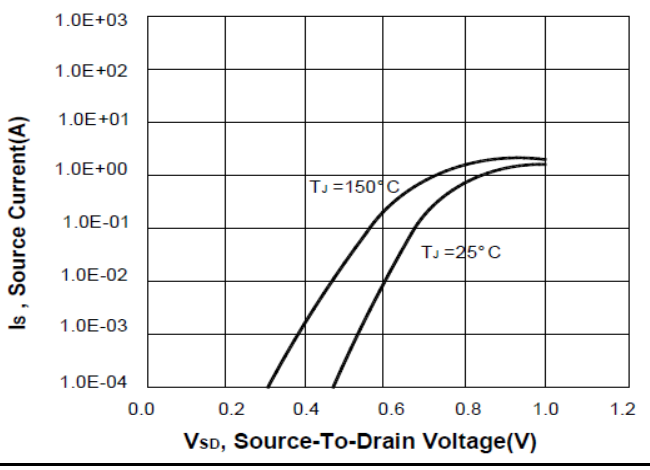
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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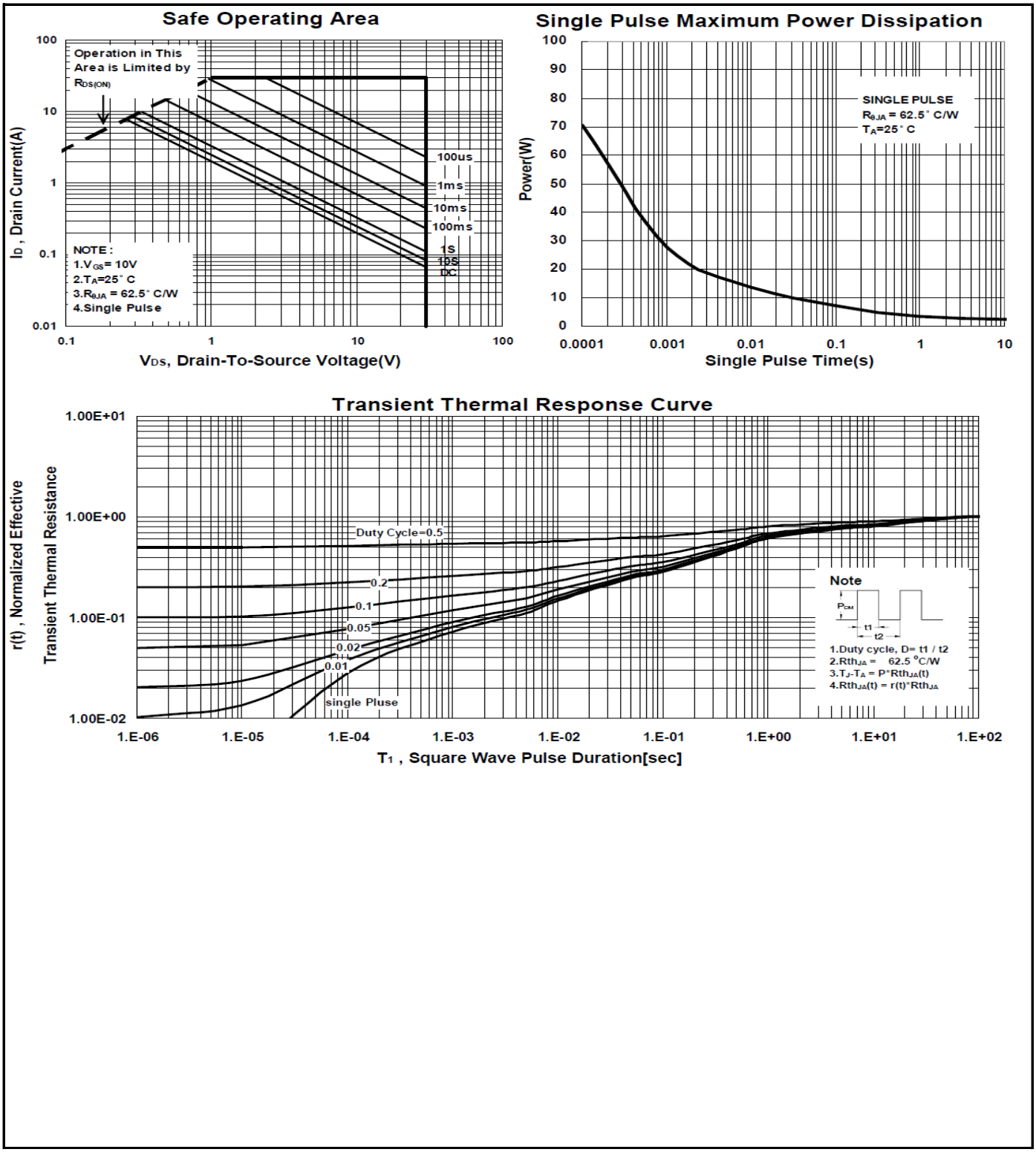

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Package Dimension

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