UNIKC Semiconductor

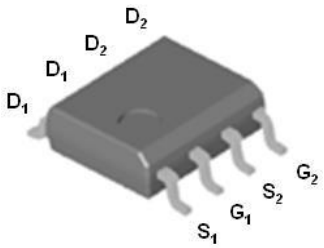
RoHS Compliant

P2103NVG

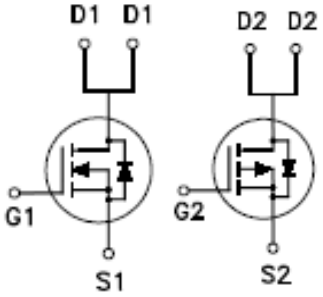
N- & P- Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30	21mΩ @V_{GS} = 10V	8A
P-Channel	-30	34mΩ @V_{GS} = 10V	-6A



SOP-8



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

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channe	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	8	-6	A
	T_A = 70 °C		6	-5	
Pulsed Drain Current[1]		I_{DM}	36	-27	
Avalanche Current		I_{AS}	26	-27	
Avalanche Energy	L =0.1mH	E_{AS}	35	38	mJ
Power Dissipation	T_A = 25 °C	P_D	2		W
	T_A = 70 °C		1.3		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

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.

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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	N-Ch	30			V
		V_{GS} = 0V, I_D = -250μA	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1	1.7	2.5	
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-1	-1.6	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N-Ch			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P-Ch			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N-Ch			1	μA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			-1	
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C	N-Ch			10	
		V_{DS} =- 20V, V_{GS} = 0V, T_J = 55 °C	P-Ch			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N-Ch	36			A
		V_{DS} =-5V, V_{GS} = -10V	P-Ch	-27			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A	N-Ch		19	31	mΩ
		V_{GS} = -4.5V, I_D = -5A	P-Ch		40	56	
		V_{GS} = 10V, I_D = 7A	N-Ch		14	21	
		V_{GS} = -10V, I_D = -6A	P-Ch		28	34	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 5A	N-Ch		14		S
		V_{DS} = -10V, I_D = -5A	P-Ch		8		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 10V, f = 1MHz P-Channel V_{GS} = 0V, V_{DS} = -10V, f = 1MHz	N-Ch		659		pF
			P-Ch		983		
Output Capacitance	C_{oss}		N-Ch		218		
			P-Ch		216		
Reverse Transfer Capacitance	C_{rss}		N-Ch		138		
			P-Ch		157		

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Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 7A P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -6A	N-Ch		16		nC
			P-Ch		21		
Gate-Source Charge[2]	Q_{gs}		N-Ch		2		
			P-Ch		3		
Gate-Drain Charge[2]	Q_{gd}		N-Ch		5		
			P-Ch		4		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V ID ≅ 1A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -15V, ID≅ -1A, V_{GS} = -10V, R_{GEN} = 6Ω	N-Ch		9		nS
			P-Ch		10		
Rise Time[2]	t_r		N-Ch		11		
			P-Ch		15		
Turn-Off Delay Time[2]	$t_{d(off)}$		N-Ch		18		
			P-Ch		68		
Fall Time[2]	t_f		N-Ch		20		
			P-Ch		34		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current[3]	I_S		N-Ch			2	A
			P-Ch			-2	
Forward Voltage[1]	V_{SD}	I_F = 5A, V_{GS} = 0V	N-Ch			1	V
		I_F = -5A, V_{GS} = 0V	P-Ch			-1	
Reverse Recovery Time	t_{rr}	I_F = 5A, dI_F/dt = 100A / μS	N-Ch		15.5		nS
		I_F = -5A, dI_F/dt = 100A / μS	P-Ch		15.5		
Reverse Recovery Charge	Q_{rr}		N-Ch		7.9		nC
			P-Ch		7.9		

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

[2]Independent of operating temperature.

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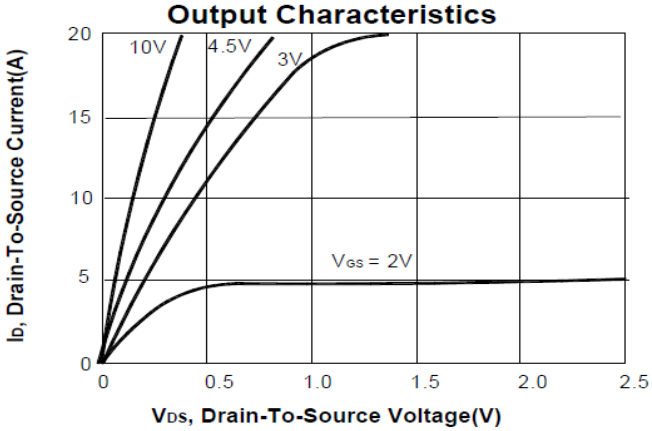
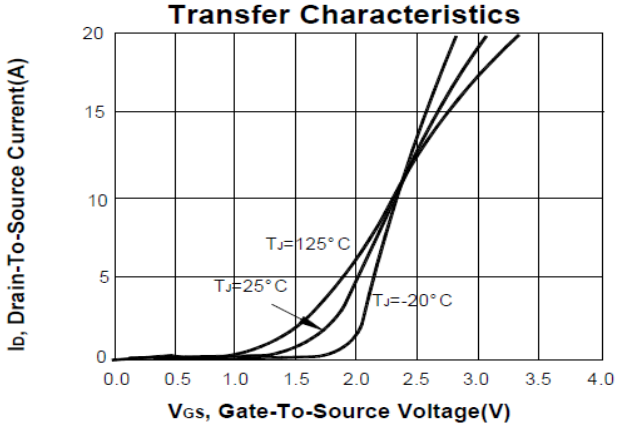
TYPICAL PERFORMANCE CHARACTERISTICS
N-CHANNEL

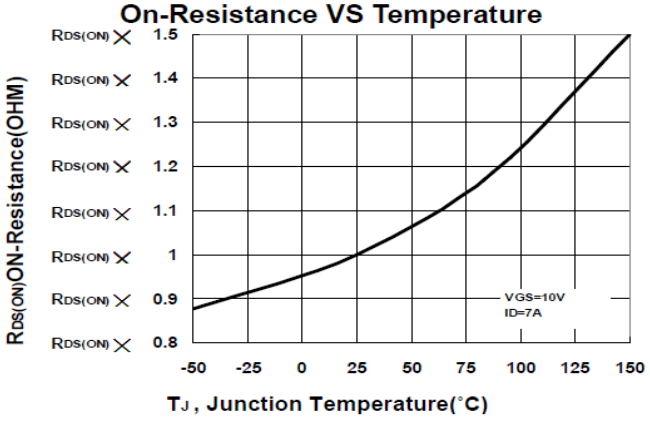
Output Characteristics



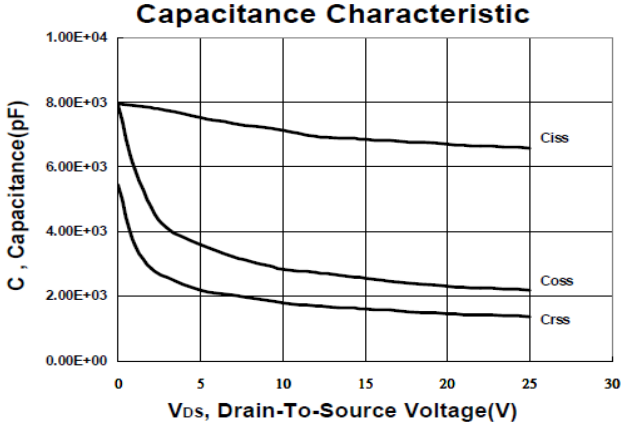
Transfer Characteristics



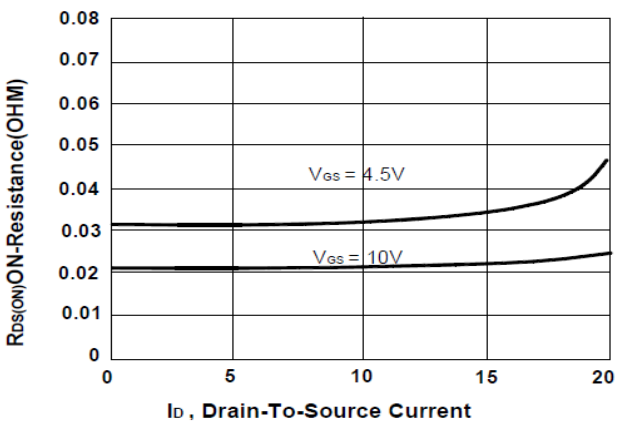
On-Resistance VS Temperature



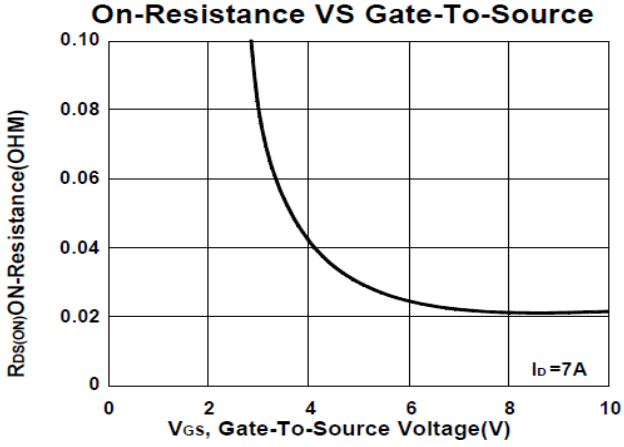
Capacitance Characteristic



On-Resistance VS Drain Current



On-Resistance VS Gate-To-Source



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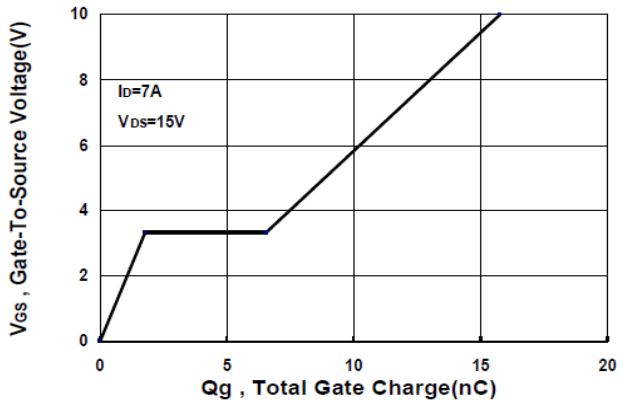
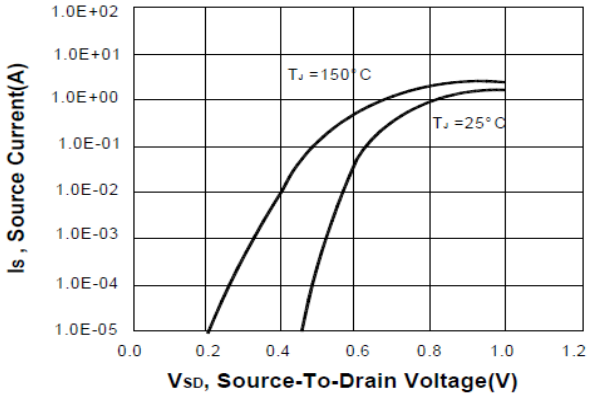
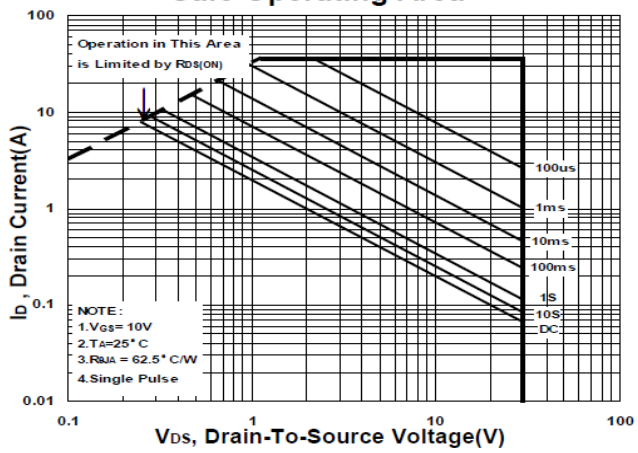
Gate charge Characteristics



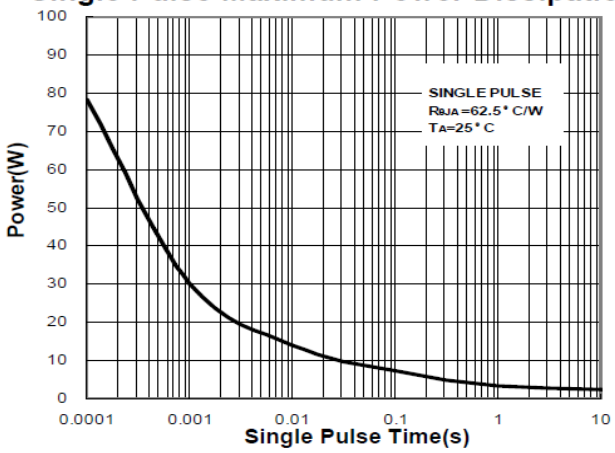
Source-Drain Diode Forward Voltage



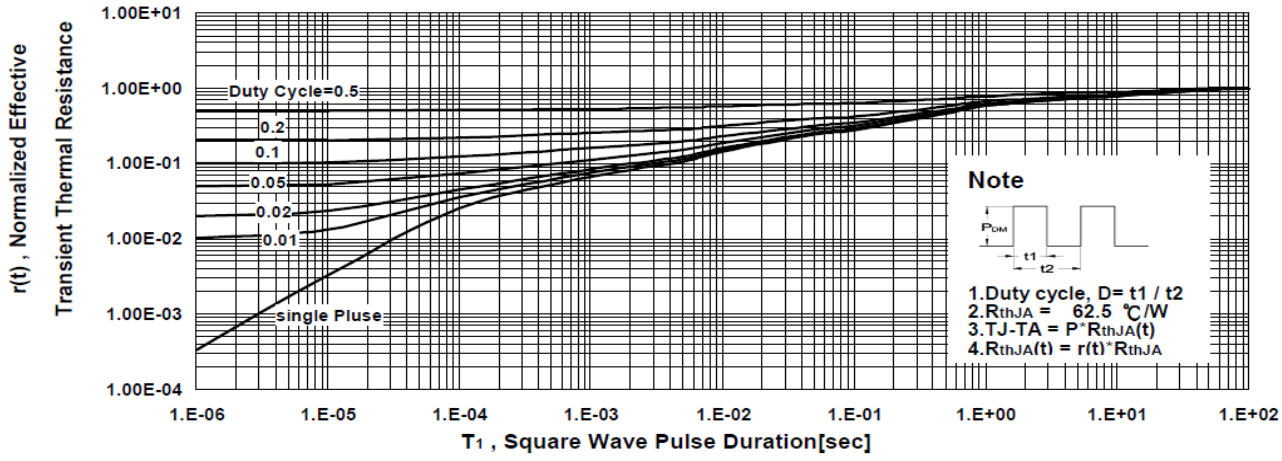
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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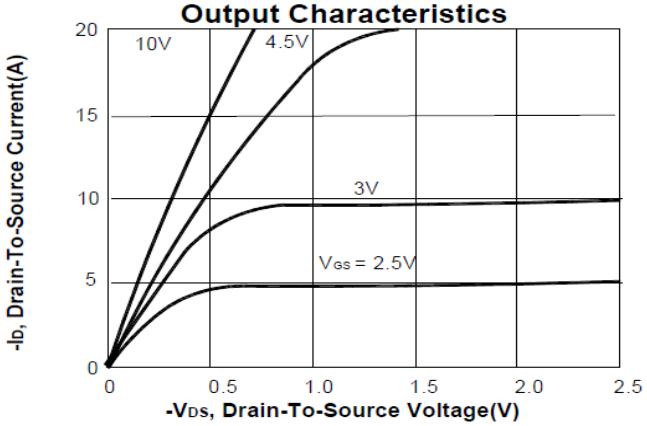
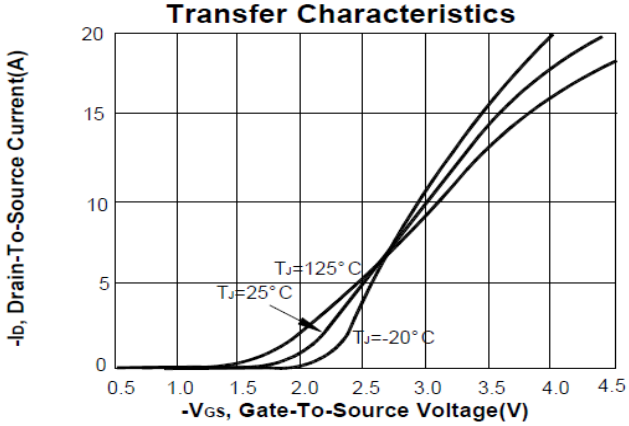
TYPICAL PERFORMANCE CHARACTERISTICS
P-CHANNEL

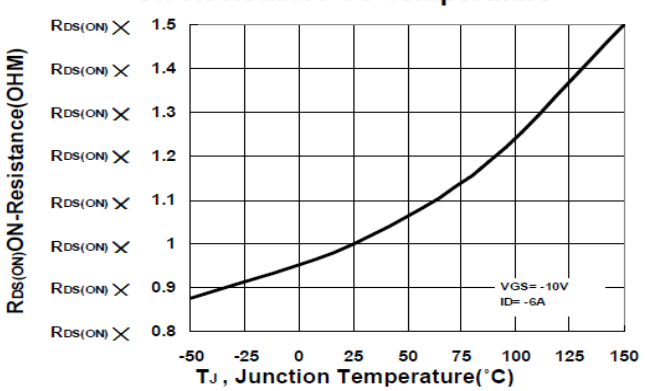
Output Characteristics



Transfer Characteristics



On-Resistance VS Temperature



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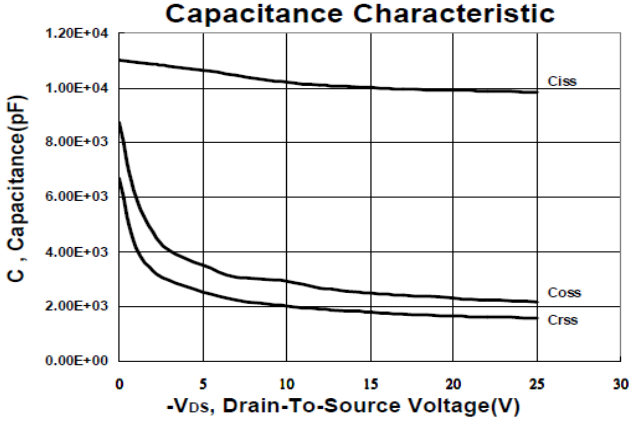
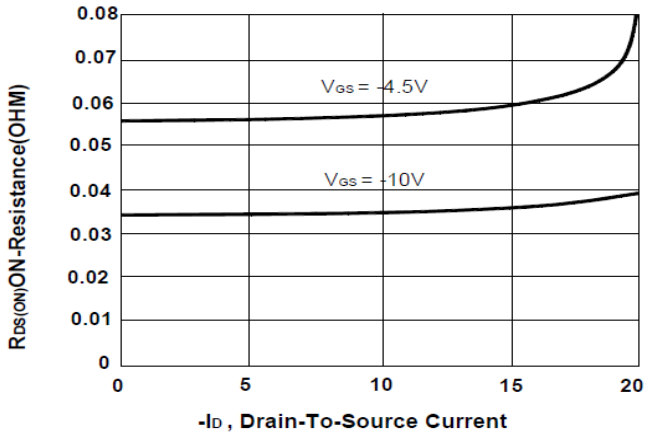
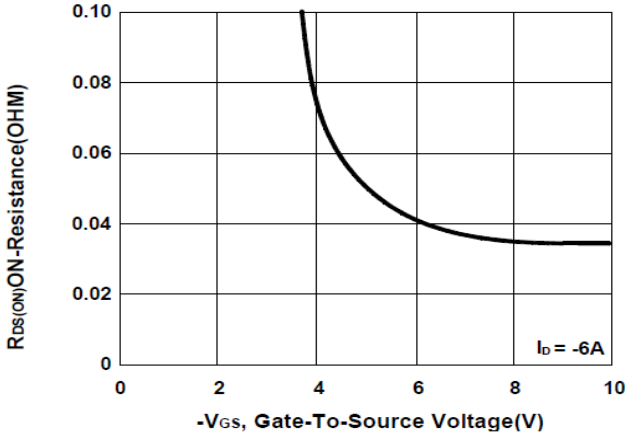


On-Resistance VS Drain Current



On-Resistance VS Gate-To-Source



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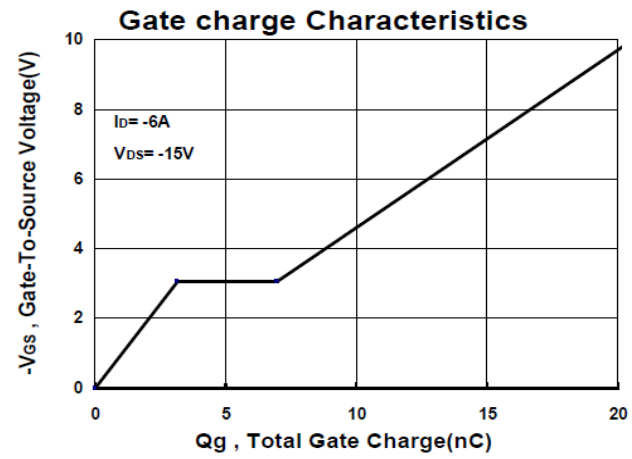

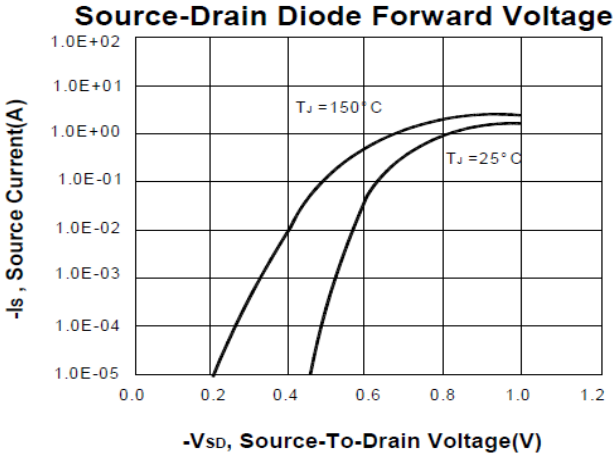

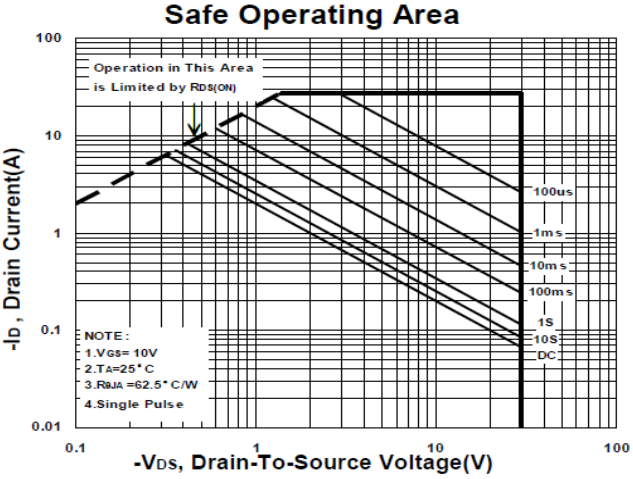

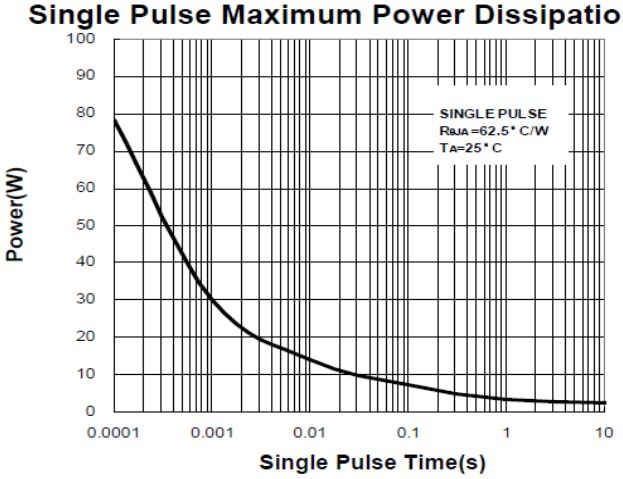

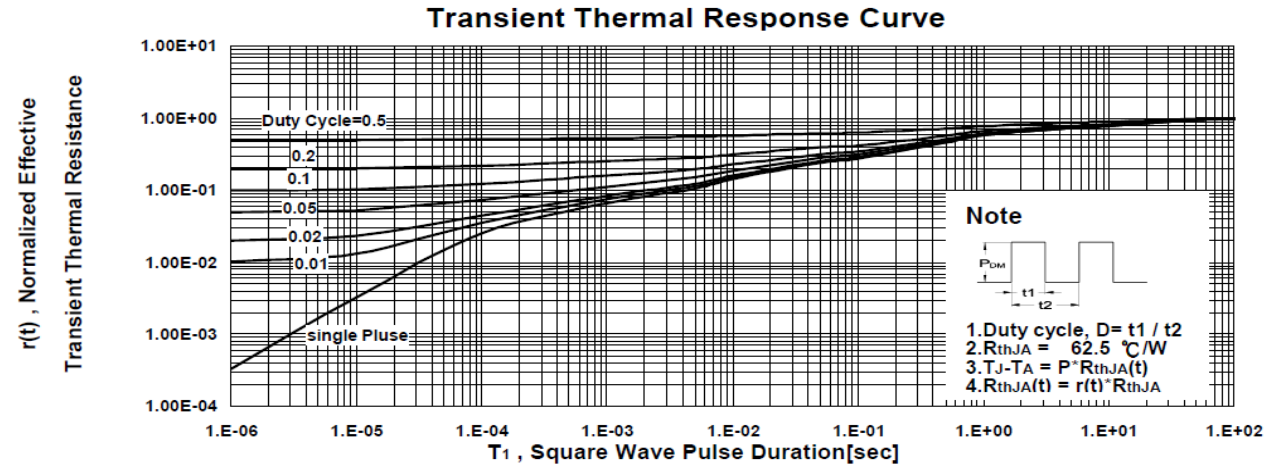

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Package Dimension

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