

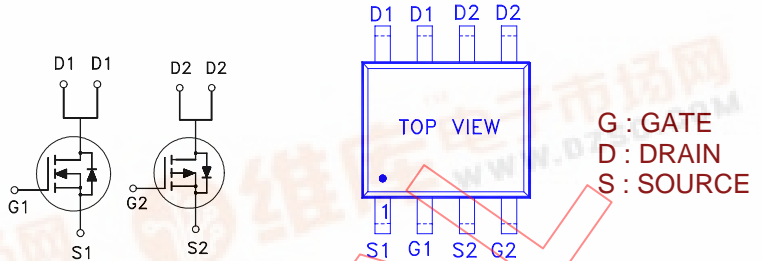
NIKO-SEM

**N- & P-Channel Enhancement Mode
Field Effect Transistor**

P2103NVG
SOP-8
Lead-Free

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30	21m	7A
P-Channel	-30	35m	-6A



ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channel	UNITS
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	± 20	± 20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	7	-6	A
	$T_C = 70\text{ }^\circ\text{C}$		6	-5	
Pulsed Drain Current ¹		I_{DM}	28	-24	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	2		W
	$T_C = 70\text{ }^\circ\text{C}$		1.3		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		$^\circ\text{C}$
Lead Temperature (¹ / ₁₆ " from case for 10 sec.)		T_L	275		

THERMAL RESISTANCE RATINGS

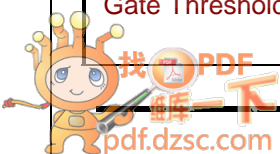
THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		62.5	$^\circ\text{C} / \text{W}$

¹Pulse width limited by maximum junction-temperature.

²Duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	N-Ch	30		V	
		$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	N-Ch	0.8	1.5		2.5
		$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	P-Ch	-0.8	-1.5		-2.5



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Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	N-Ch			± 100	nA
		$V_{DS} = 0V, V_{GS} = \pm 20V$	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	
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$	N-Ch			10	
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 55^\circ C$	P-Ch			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	N-Ch	28			A
		$V_{DS} = -5V, V_{GS} = -10V$	P-Ch	-24			
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	N-Ch		21	32	m
		$V_{GS} = -4.5V, I_D = -5A$	P-Ch		44	60	
		$V_{GS} = 10V, I_D = 7A$	N-Ch		14	21	
		$V_{GS} = -10V, I_D = -6A$	P-Ch		28	35	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 5A$	N-Ch		8		S
		$V_{DS} = -10V, I_D = -5A$	P-Ch		7		

DYNAMIC

Input Capacitance	C_{iss}	N-Channel	N-Ch		1700		pF
			P-Ch		970		
Output Capacitance	C_{oss}	$V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$	N-Ch		380		pF
			P-Ch		370		
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	N-Ch		260		pF
			P-Ch		180		
Total Gate Charge ²	Q_g	N-Channel $V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V,$ $I_D = 6A$	N-Ch		40		nC
			P-Ch		28		
Gate-Source Charge ²	Q_{gs}	P-Channel $V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = -10V,$ $I_D = -5A$	N-Ch		28		nC
			P-Ch		6		
Gate-Drain Charge ²	Q_{gd}		N-Ch		12		nC
			P-Ch		12		

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Turn-On Delay Time ²	$t_{d(on)}$	N-Channel	N-Ch		20		nS
			P-Ch		20		
Rise Time ²	t_r	$V_{DS} = 15V$	N-Ch		10		
		$I_D \cong 1A, V_{GS} = 10V, R_{GEN} = 6$	P-Ch		17		
Turn-Off Delay Time ²	$t_{d(off)}$	P-Channel	N-Ch		120		
			P-Ch		160		
Fall Time ²	t_f	$V_{DS} = -15V, R_L = 1$	N-Ch		35		
		$I_D \cong -1A, V_{GS} = -10V, R_{GEN} = 6$	P-Ch		75		

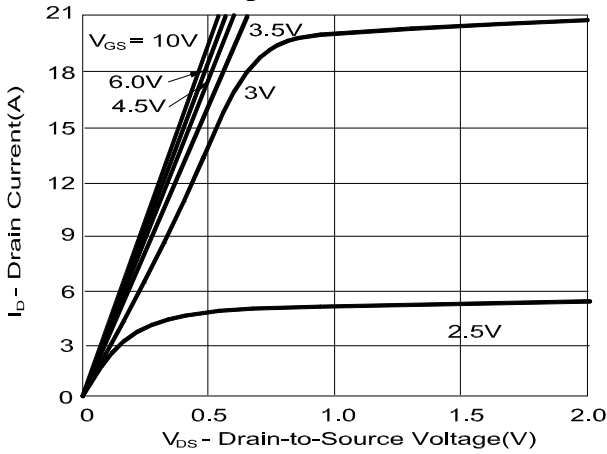
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_C = 25^\circ C$)

Continuous Current	I_S		N-Ch		3	A
			P-Ch		-3	
Pulsed Current ³	I_{SM}		N-Ch		6	A
			P-Ch		-6	
Forward Voltage ¹	V_{SD}	$I_F = 1A, V_{GS} = 0V$	N-Ch		1	V
		$I_F = -1A, V_{GS} = 0V$	P-Ch		-1	
Reverse Recovery Time	t_{rr}	$I_F = 5A, di_F/dt = 100A / \mu S$	N-Ch		15.5	nS
		$I_F = -5A, di_F/dt = 100A / \mu S$	P-Ch		15.5	
Reverse Recovery Charge	Q_{rr}		N-Ch		7.9	nC
			P-Ch		7.9	

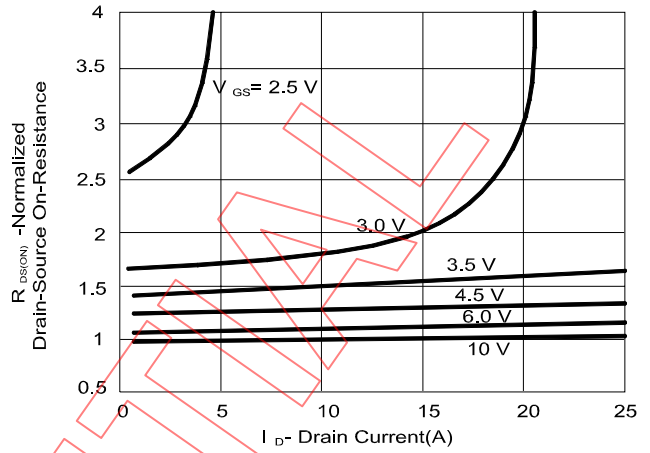
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.³Pulse width limited by maximum junction temperature.**REMARK: THE PRODUCT MARKED WITH "P2103NVG", DATE CODE or LOT #****Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.**

N-CHANNEL

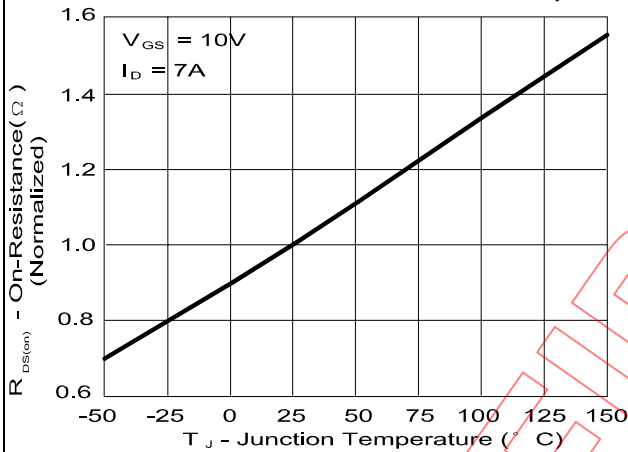
On-Region Characteristics



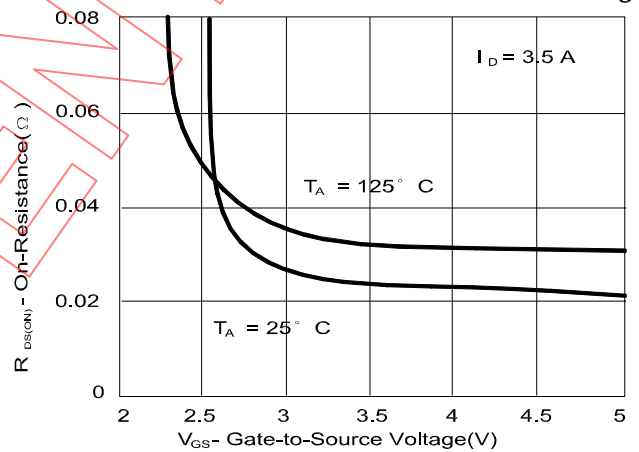
On-Resistance Variation with Drain Current and Gate Voltage



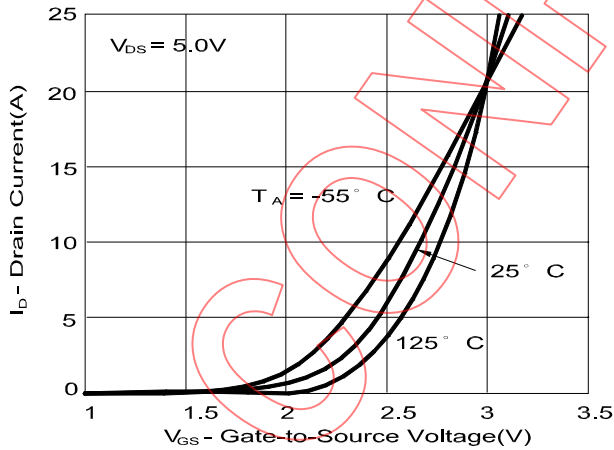
On-Resistance Variation with Temperature



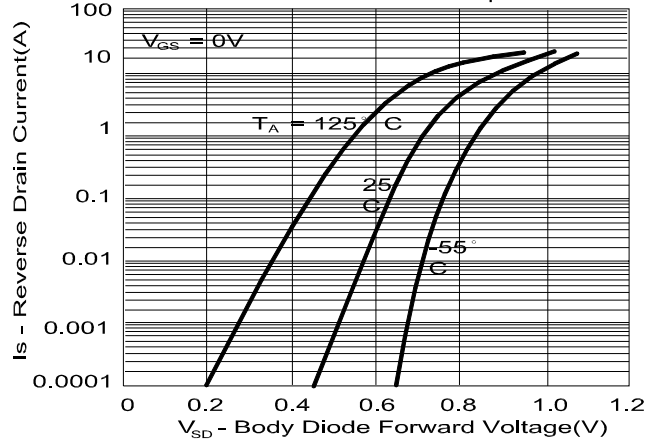
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



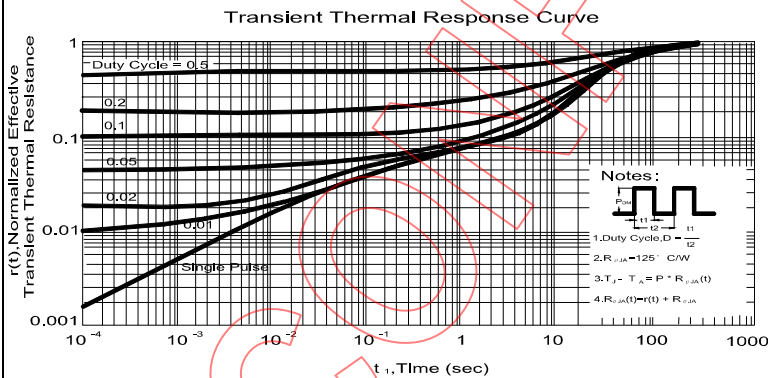
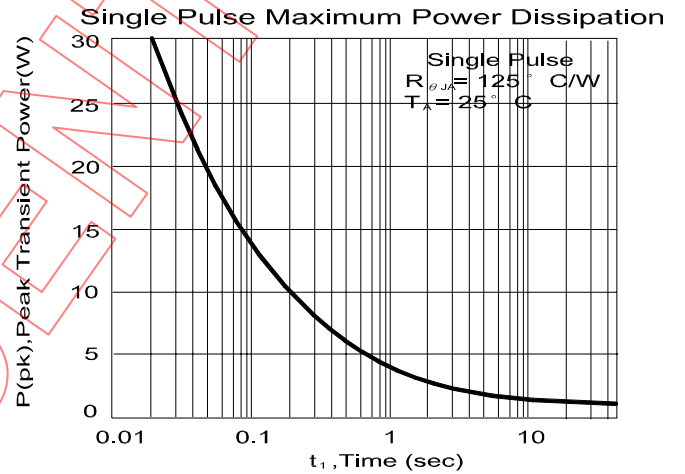
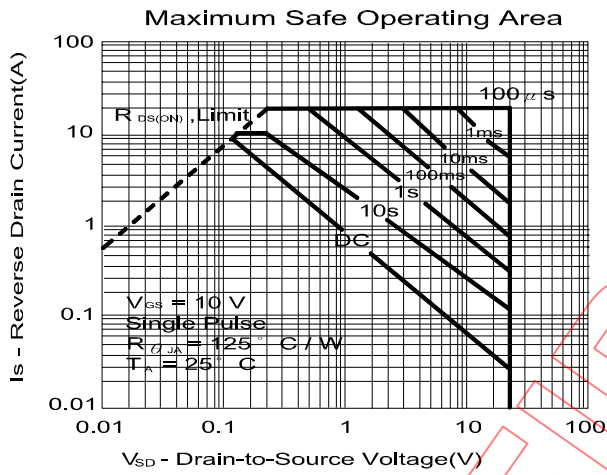
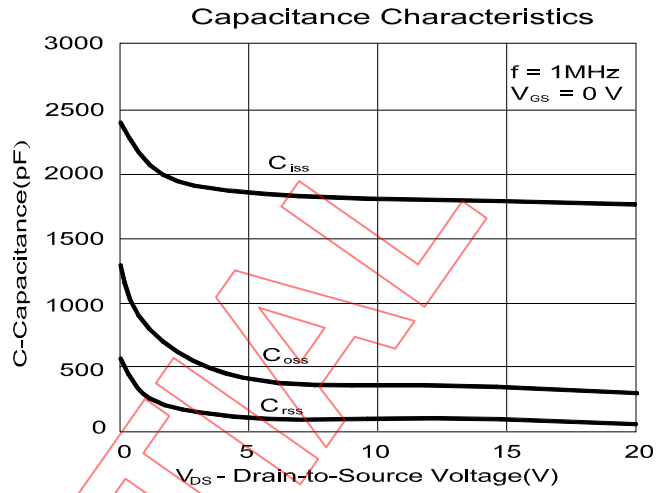
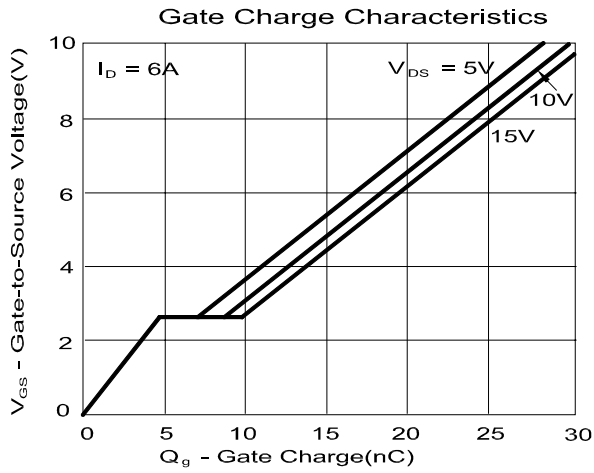
Body Diode Forward Voltage Variation with Source Current and Temperature



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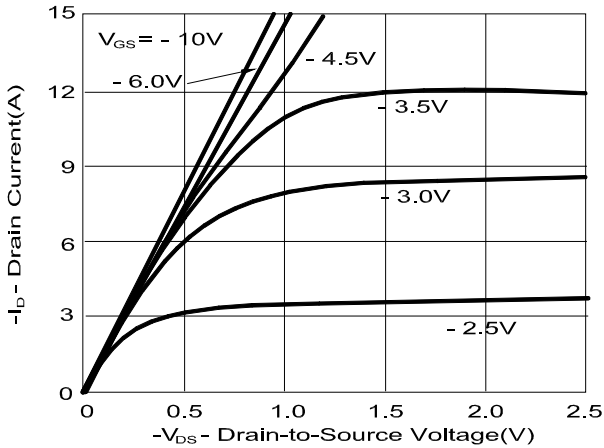
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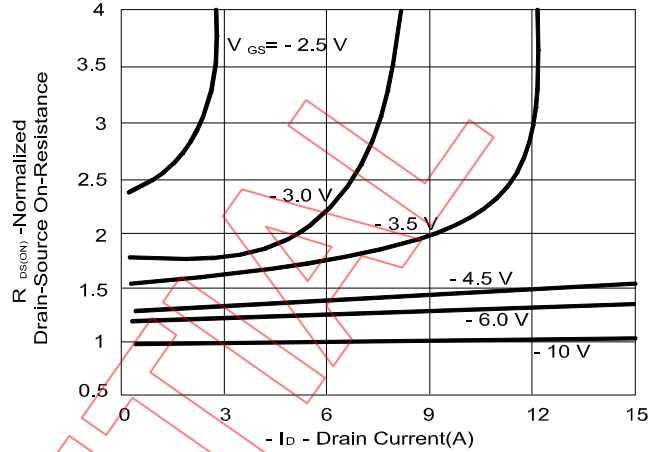


P-CHANNEL

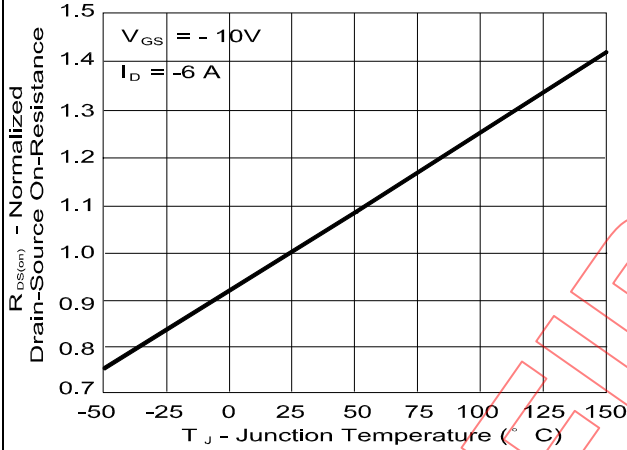
On-Region Characteristics



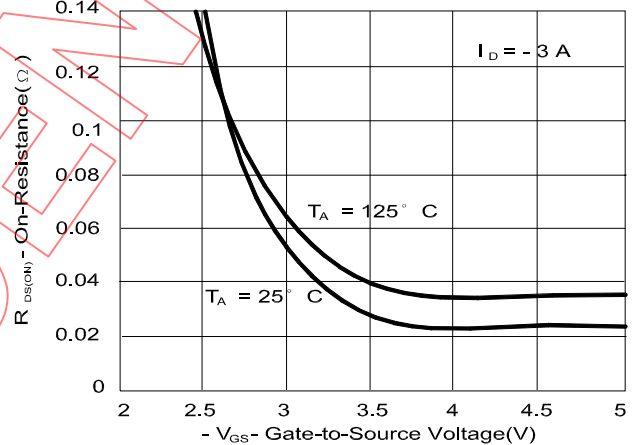
On-Resistance Variation with Drain Current and Gate Voltage



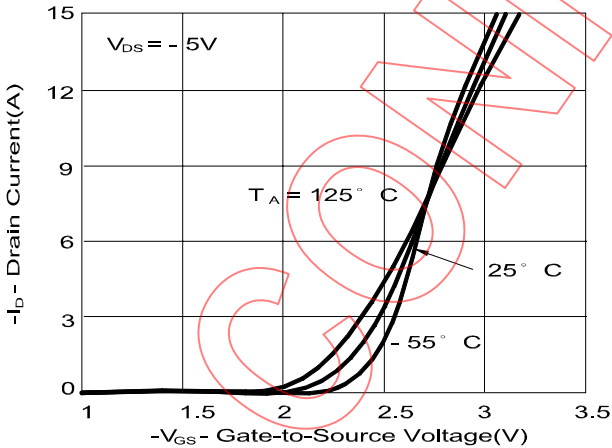
On-Resistance Variation with Temperature



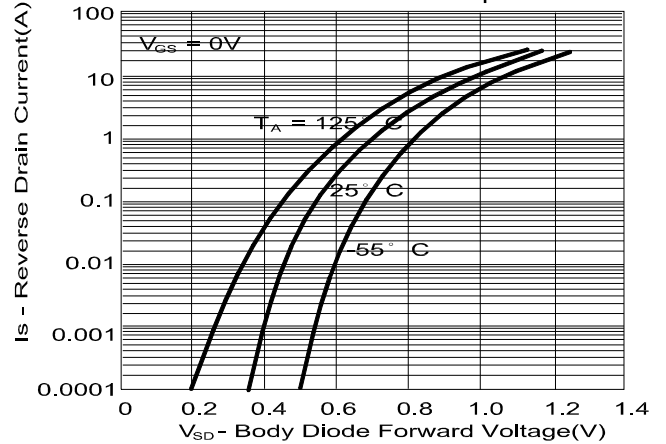
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



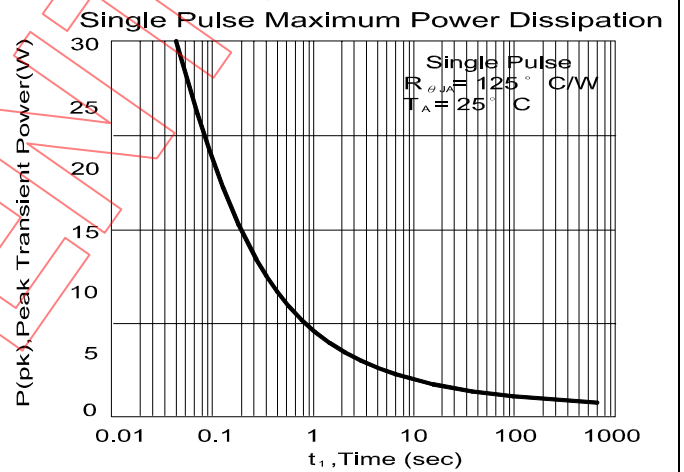
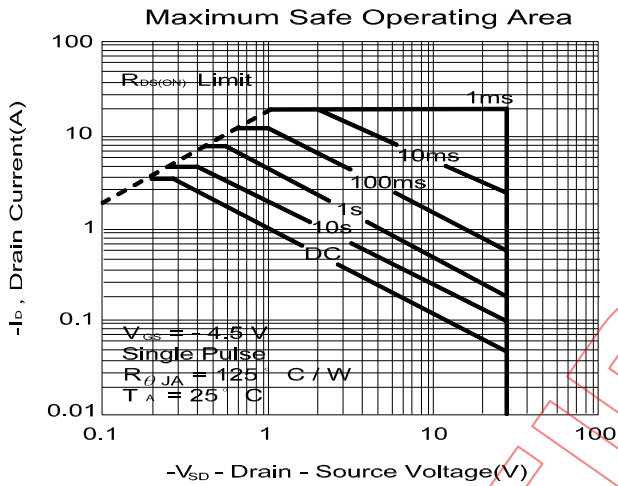
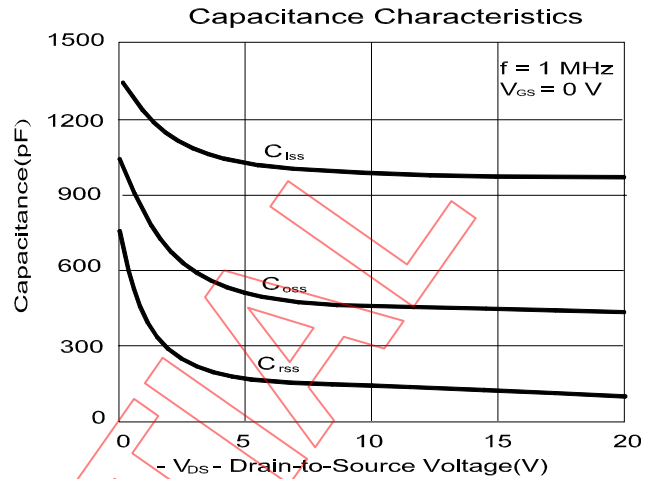
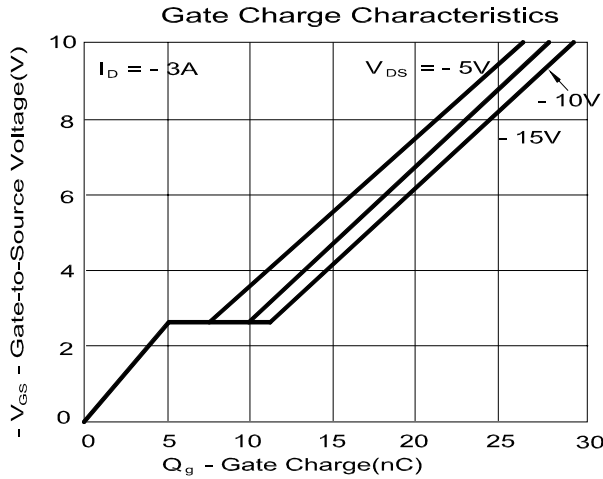
Body Diode Forward Voltage Variation with Source Current and Temperature



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CONFIDENTIAL

SOIC-8 (D) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.5	0.715	0.83
B	3.8	3.9	4.0	I	0.18	0.254	0.25
C	5.8	6.0	6.2	J		0.22	
D	0.38	0.445	0.51	K	0°	4°	8°
E		1.27		L			
F	1.35	1.55	1.75	M			
G	0.1	0.175	0.25	N			

