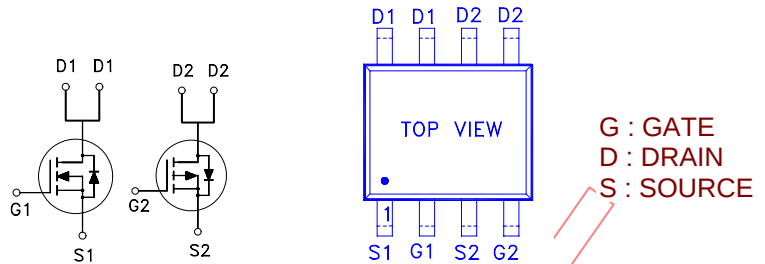


PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30	27.5m Ω	7A
P-Channel	-30	45m Ω	-5A



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	-5	A
	$T_C = 70\text{ }^{\circ}\text{C}$		6	-4	
Pulsed Drain Current ¹		I_{DM}	20	-20	
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		°C

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	N-Ch	30			V
		$V_{GS} = 0V, I_D = -250\mu A$	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	N-Ch	1	1.5	2.5	
		$V_{DS} = V_{GS}, I_D = -250\mu A$	P-Ch	-1	-1.5	-2.5	
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	20			A
		$V_{DS} = -5V, V_{GS} = -10V$	P-Ch	-20			
Drain-Source Resistance ¹ On-State	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	N-Ch		30	40	m Ω
		$V_{GS} = -4.5V, I_D = -4A$	P-Ch		62	80	
		$V_{GS} = 10V, I_D = 7A$	N-Ch		20.5	27.5	
		$V_{GS} = -10V, I_D = -5A$	P-Ch		37.5	45	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 7A$	N-Ch		16		S
		$V_{DS} = -5V, I_D = -5A$	P-Ch		13		

DYNAMIC							
Input Capacitance	C_{iss}	N-Channel	N-Ch		680		
			P-Ch		780		
Output Capacitance	C_{oss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	N-Ch		105		pF
			P-Ch		145		
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$	N-Ch		75		
			P-Ch		79		
Total Gate Charge ²	Q_g	N-Channel $V_{DS} = 0.5 \cdot V_{(BR)DSS}, V_{GS} = 10V,$ $I_D = 7A$	N-Ch		14		nC
			P-Ch		15.1		
Gate-Source Charge ²	Q_{gs}	P-Channel $V_{DS} = 0.5 \cdot V_{(BR)DSS}, V_{GS} = -10V,$ $I_D = -5A$	N-Ch		1.9		
			P-Ch		2.1		
Gate-Drain Charge ²	Q_{gd}		N-Ch		3.3		
			P-Ch		4.0		
Turn-On Delay Time ²	$t_{d(on)}$	N-Channel $V_{DD} = 10V$	N-Ch		4.6	7	
			P-Ch		7.7	11.5	
Rise Time ²	t_r	$I_D \cong 1A, V_{GS} = 10V, R_{GEN} = 3\Omega$	N-Ch		4	6	
			P-Ch		5.7	8.5	
Turn-Off Delay Time ²	$t_{d(off)}$	P-Channel $V_{DD} = -10V$	N-Ch		20	30	nS
			P-Ch		20	30	
Fall Time ²	t_f	$I_D \cong -1A, V_{GS} = -10V, R_{GEN} = 3\Omega$	N-Ch		5	8	
			P-Ch		9.5	14	

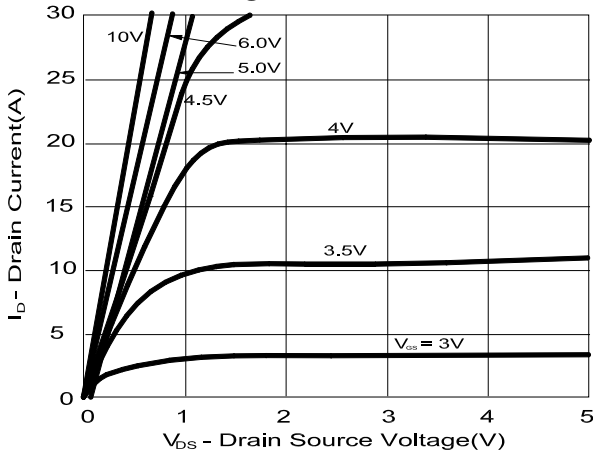
NIKO-SEM**N- & P-Channel Enhancement Mode
Field Effect Transistor****P5003QVG****SOP-8****Lead-Free****SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_c = 25 °C)**

Continuous Current	I _S		N-Ch			1.3	A
			P-Ch			-1.3	
Pulsed Current ³	I _{SM}		N-Ch			2.6	
			P-Ch			-2.6	
Forward Voltage ¹	V _{SD}	I _F = 1A, V _{GS} = 0V	N-Ch			1	V
		I _F = -1A, V _{GS} = 0V	P-Ch			-1	

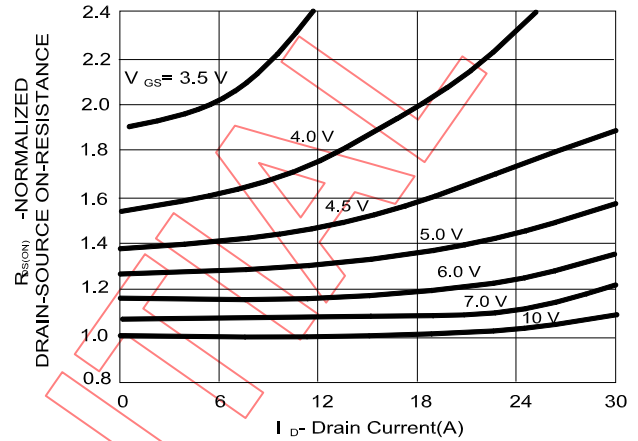
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.²Independent of operating temperature.³Pulse width limited by maximum junction temperature.**REMARK: THE PRODUCT MARKED WITH "P5003QVG", DATE CODE or LOT #****Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.**

N-CHANNEL

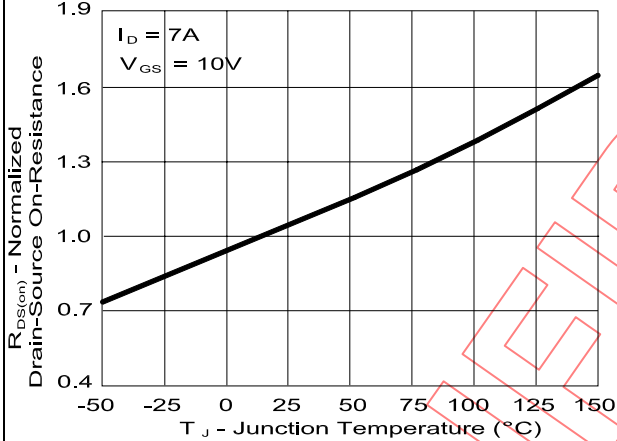
On-Region Characteristics



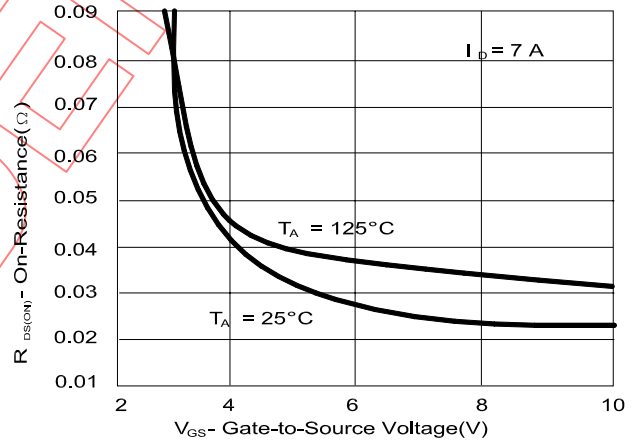
On-Resistance Variation with Drain Current and Gate Voltage



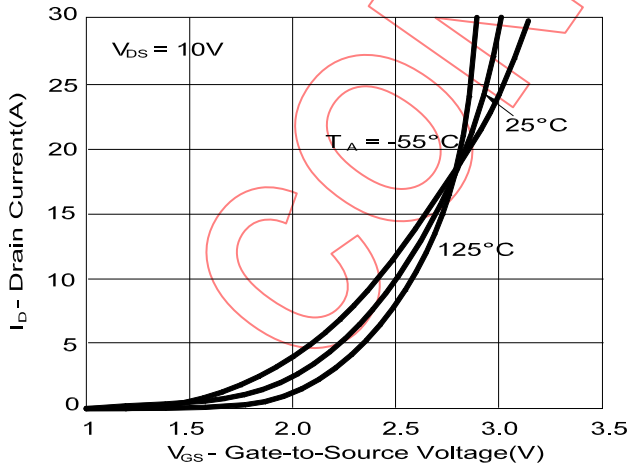
On-Resistance Variation with Temperature



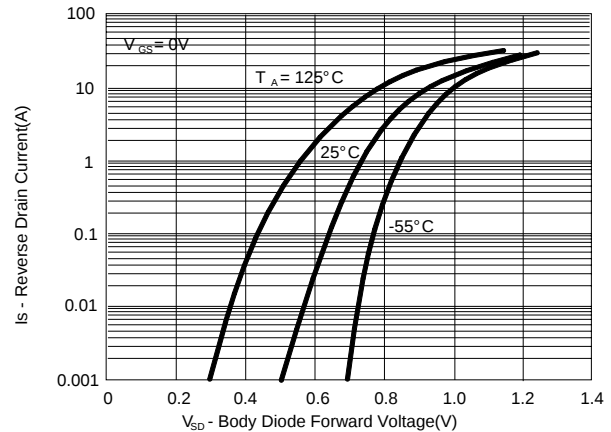
On-Resistance Variation with Gate-to-Source Voltage



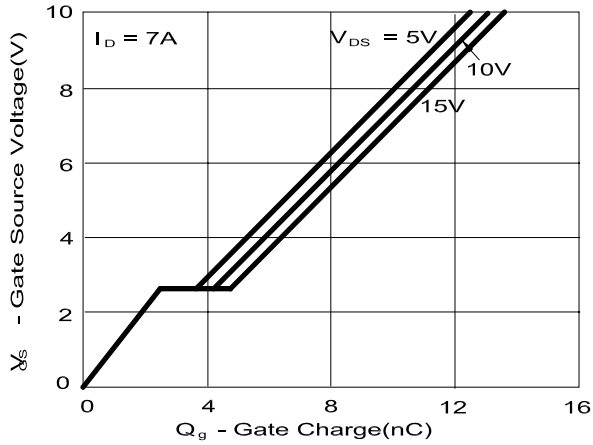
Transfer Characteristics



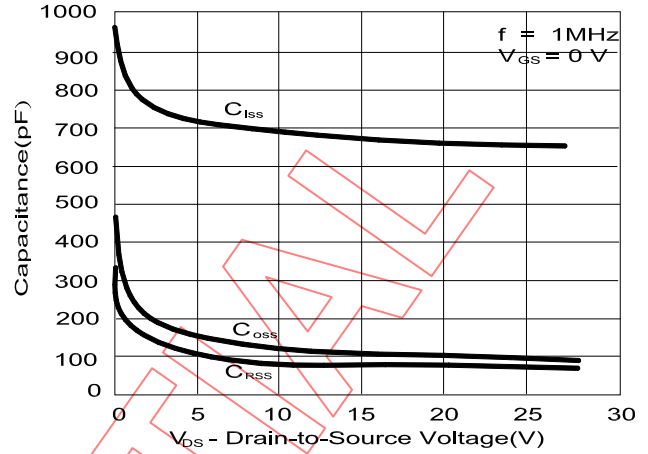
Body Diode Forward Voltage Variation with Source Current and Temperature



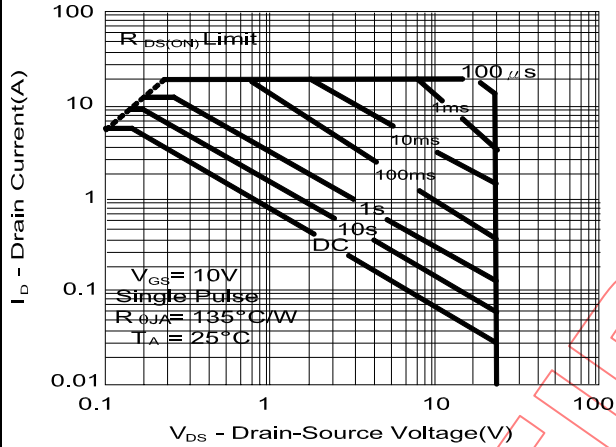
Gate Charge Characteristics



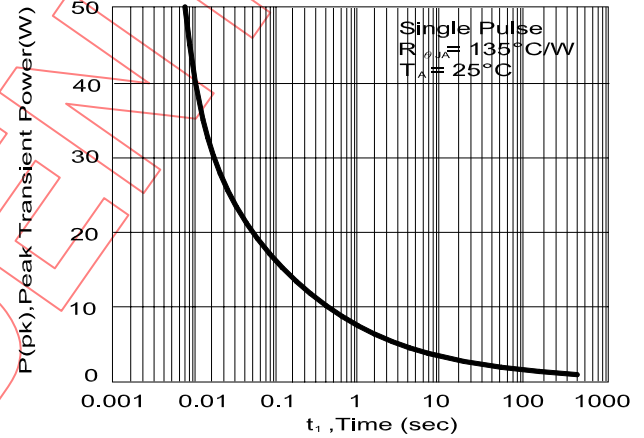
Capacitance Characteristics



Maximum Safe Operating Area

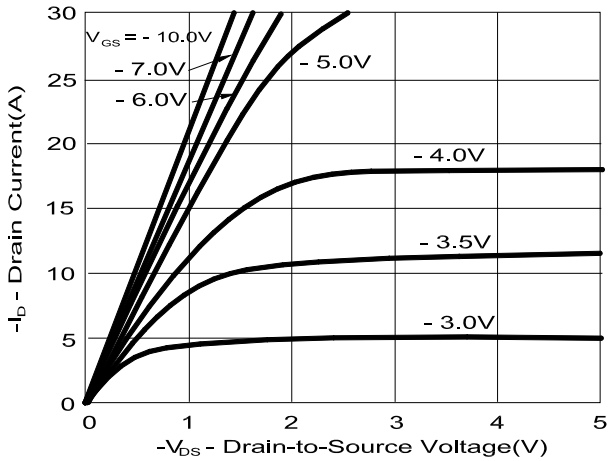


Single Pulse Maximum Power Dissipation

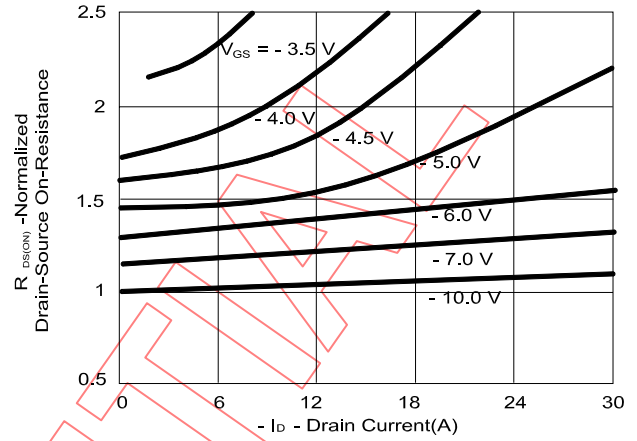


P-CHANNEL

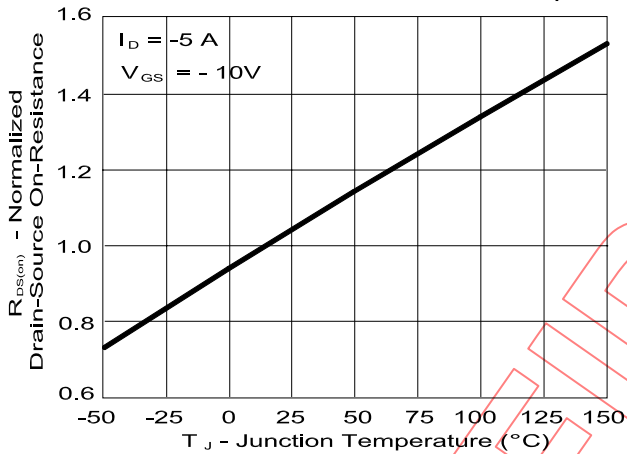
On-Region Characteristics



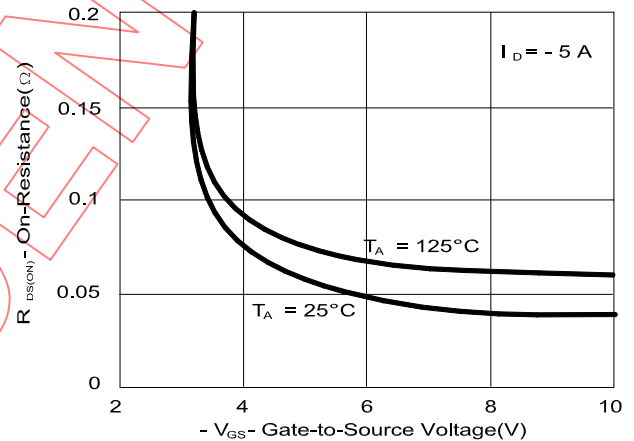
On-Resistance Variation with Drain Current and Gate Voltage



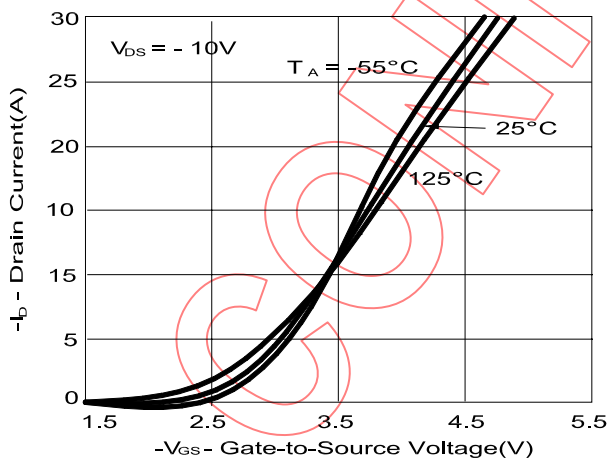
On-Resistance Variation with Temperature



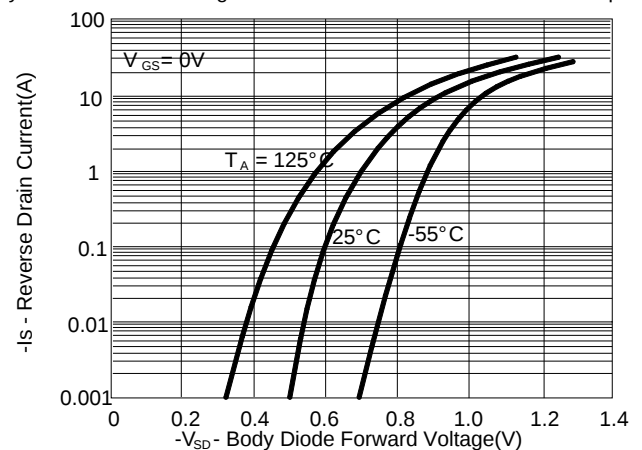
On-Resistance Variation with Gate-to-Source Voltage



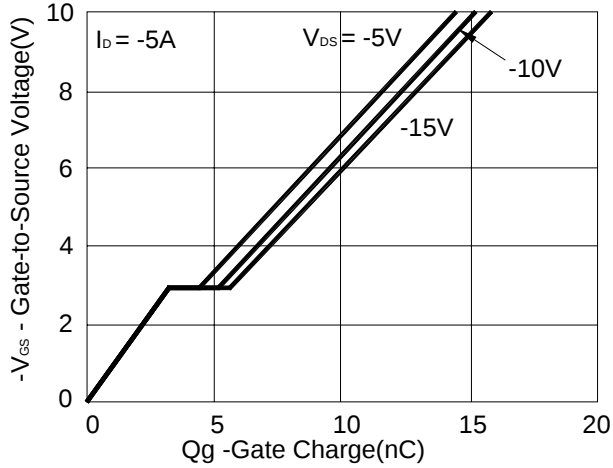
Transfer Characteristics



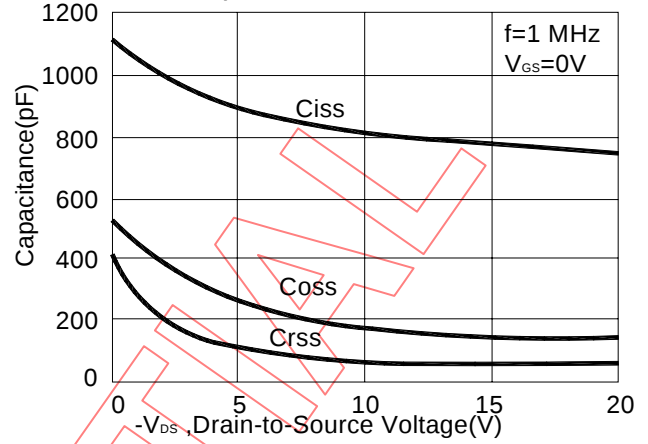
Body Diode Forward Voltage Variation with Source Current and Temperature



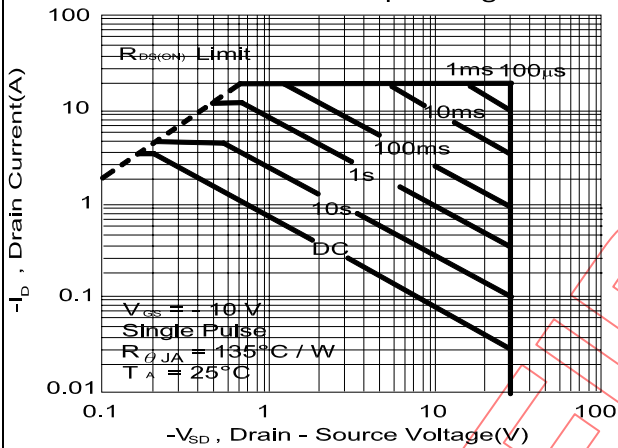
Gate Charge Characteristics



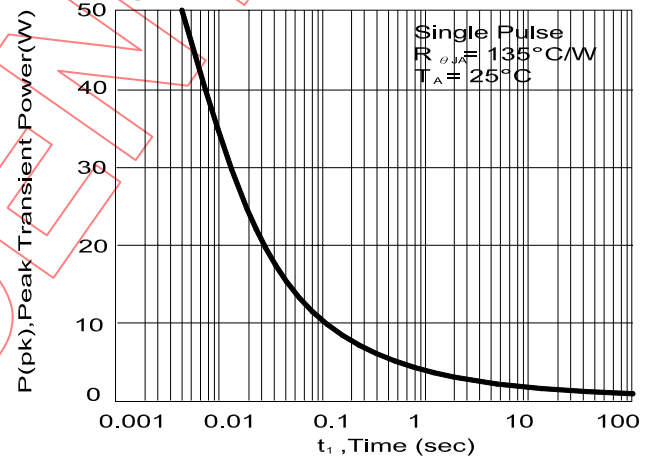
Capacitance Characteristics



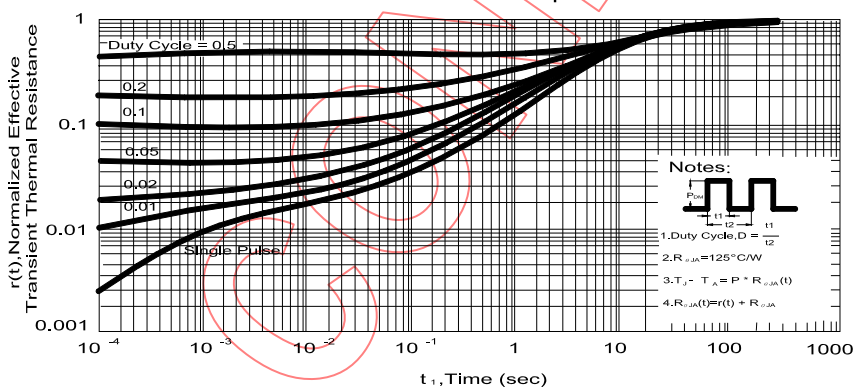
Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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			

