NIKO-SEM

N- & P-Channel Enhancement Mode Field Effect Transistor

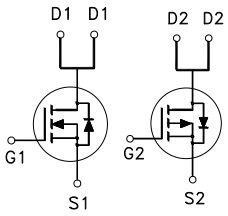
PA110NV

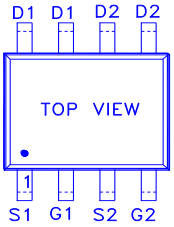
SOP-8

Halogen-Free & Lead-Free

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	-100V	170mΩ	-2.5A
Q1	100V	110mΩ	2.9A





G. GATE
D. DRAIN
S. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	Q2	Q1	UNITS
Drain-Source Voltage		V_{DS}	-100	100	V
Gate-Source Voltage		V_{GS}	±25	±20	V
Continuous Drain Current[2]	T_C = 25 °C	I_D	-2.5	2.9	A
	T_C = 100 °C		-2	2.3	
Pulsed Drain Current[1]		I_{DM}	-15	15	
Avalanche Current		I_{AS}	-10.8	5.8	
Avalanche Energy	L = 1mH	E_{AS}	58.5	16.8	mJ
Power Dissipation[2]	T_C = 25 °C	P_D	2.4	2.1	W
	T_C = 100 °C		1.9	1.3	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL		TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	t ≦10s	$R_{\theta JA}$	Q2		54	°C / W
			Q1		58	
Junction-to-Ambient	Steady-State	$R_{\theta JA}$	Q2		87	
			Q1		95	

[1]Pulse width limited by maximum junction temperature.
[2]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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

PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	Q2	-100			V
		V_{GS} = 0V, I_D = 250μA	Q1	100			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	Q2	-1.3	-1.8	-2.3	
		V_{DS} = V_{GS}, I_D = 250μA	Q1	1	1.8	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±25V	Q2			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	Q1			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -80V, V_{GS} = 0V	Q2			-1	μA
		V_{DS} = 80V, V_{GS} = 0V	Q1			1	
		V_{DS} = -80V, V_{GS} = 0V, T_J = 55 °C	Q2			-10	
		V_{DS} = 80V, V_{GS} = 0V, T_J = 55 °C	Q1			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -2.5A	Q2		163	190	mΩ
		V_{GS} = 4.5V, I_D = 2.9A	Q1		85	120	
		V_{GS} = -10V, I_D = -2.5A	Q2		150	170	
		V_{GS} = 10V, I_D = 2.9A	Q1		80	110	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -2.5A	Q2		14		S
		V_{DS} = 5V, I_D = 2.9A	Q1		18		
DYNAMIC							
Input Capacitance	C_{iss}	Q2 V_{GS} = 0V, V_{DS} = -25V, f = 1MHz Q1 V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	Q2		1546		pF
			Q1		617		
Output Capacitance	C_{oss}		Q2		98		
			Q1		55		
Reverse Transfer Capacitance	C_{rss}		Q2		60		
			Q1		32		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q2		3.8		Ω
			Q1		1.5		
Total Gate Charge[2]	Q_g VGS = 10V	Q2 V_{DS} = -50V , V_{GS} = -10V, I_D = -2.5A Q1 V_{DS} = 50V , V_{GS} = 10V, I_D = 2.9A	Q2		28		nC
			Q1		13.5		
	Q_g VGS = 4.5V		Q2		14.7		
			Q1		7.8		
Gate-Source Charge[2]	Q_{gs}		Q2		3.8		
			Q1		1.6		
Gate-Drain Charge[2]	Q_{gd}		Q2		6.6		
			Q1		4.4		

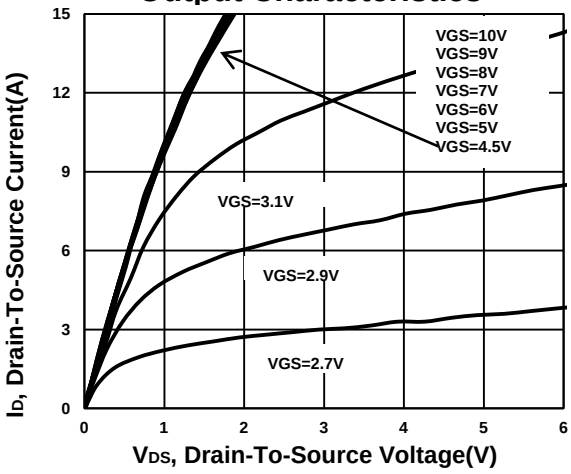
Turn-On Delay Time[2]	$t_{d(on)}$	Q2 , V_{DS} = -50V , $I_D \cong$ -2.5A, V_{GS} = -10V, R_{GEN} =6Ω	Q2		16		nS
			Q1		11		
Rise Time[2]	t_r		Q2		24		
			Q1		25		
Turn-Off Delay Time[2]	$t_{d(off)}$	Q1 , V_{DS} = 50V , $I_D \cong$ 2.9A, V_{GS} = 10V, R_{GEN} =6Ω	Q2		61		
			Q1		27		
Fall Time[2]	t_f		Q2		49		
			Q1		45		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current[3]	I_S		Q2			-2	A
			Q1			1.5	
Forward Voltage[1]	V_{SD}	I_F = -2.5A, V_{GS} = 0V	Q2			-1.2	V
		I_F = 2.9A, V_{GS} = 0V	Q1			1.4	
Reverse Recovery Time	t_{rr}	Q2 I_F = -2.5A, dI_F/dt = 100A / μS	Q2		42		nS
			Q1		25		
Reverse Recovery Charge	Q_{rr}	Q1 I_F = 2.9A, dI_F/dt = 100A / μS	Q2		82		nC
			Q1		24		

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

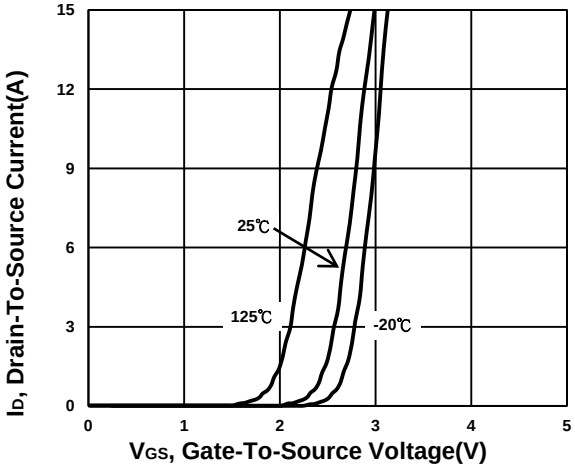
Typical performance characteristics

N-channel

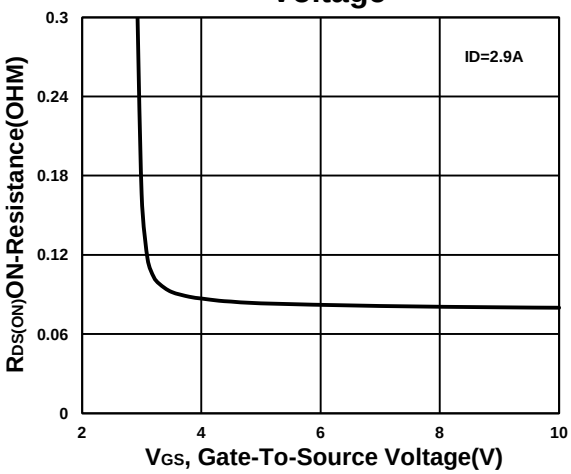
Output Characteristics



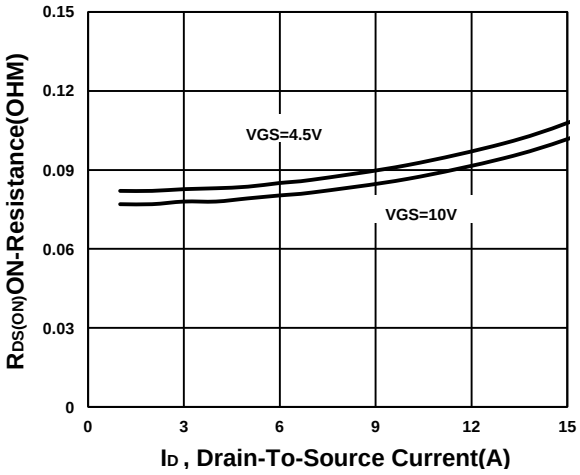
Transfer Characteristics



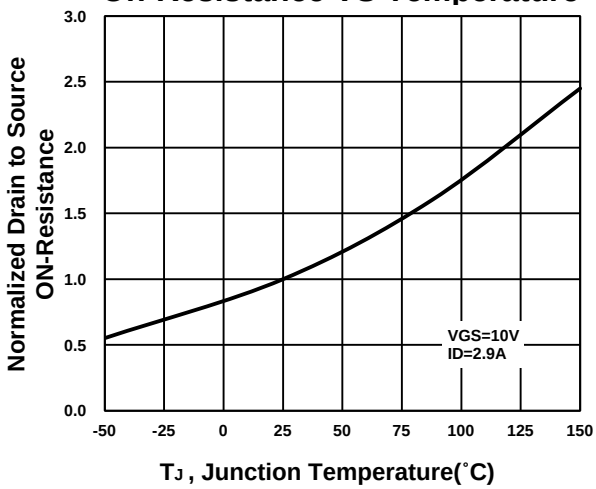
On-Resistance VS Gate-To-Source Voltage



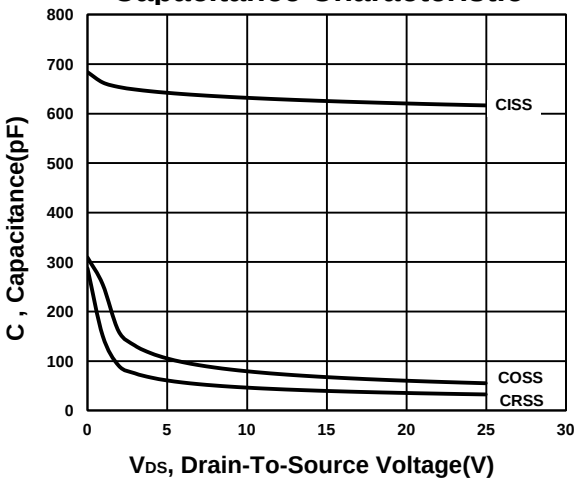
On-Resistance VS Drain Current



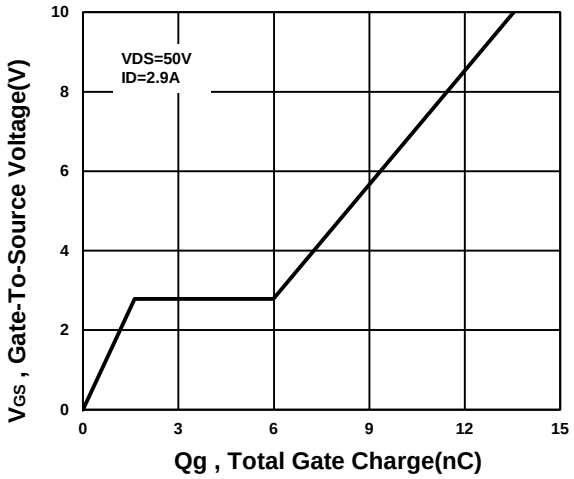
On-Resistance VS Temperature



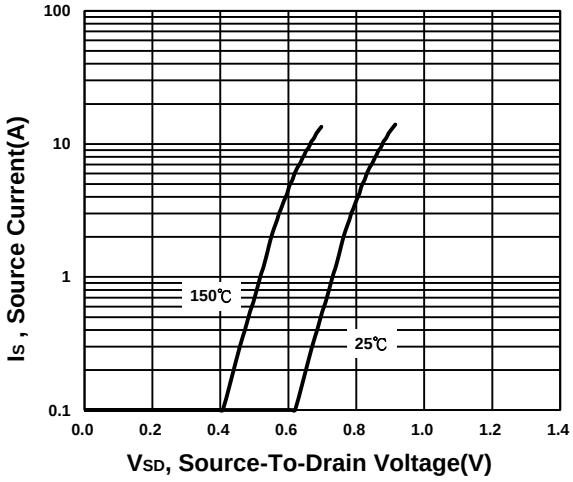
Capacitance Characteristic



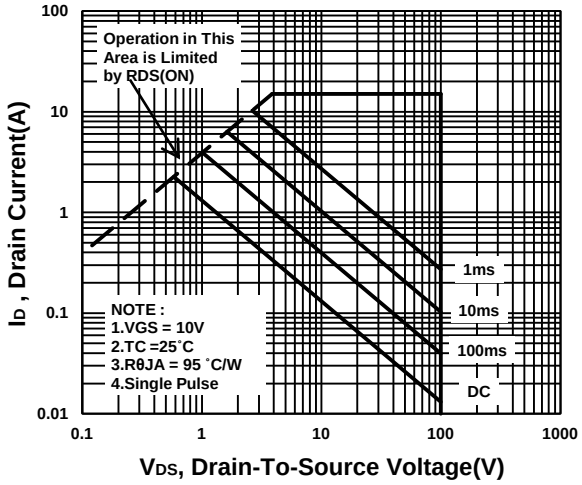
Gate charge Characteristics



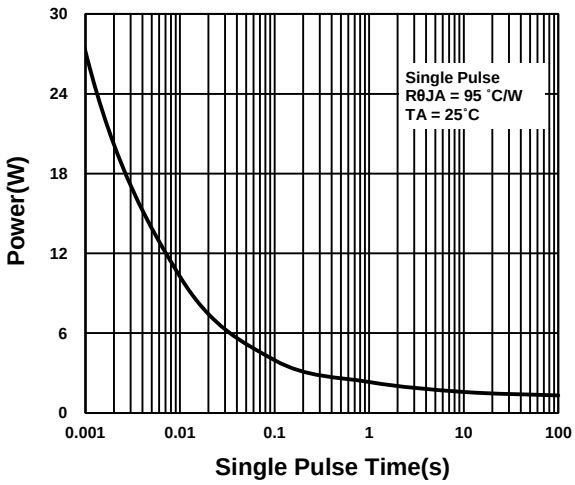
Source-Drain Diode Forward Voltage



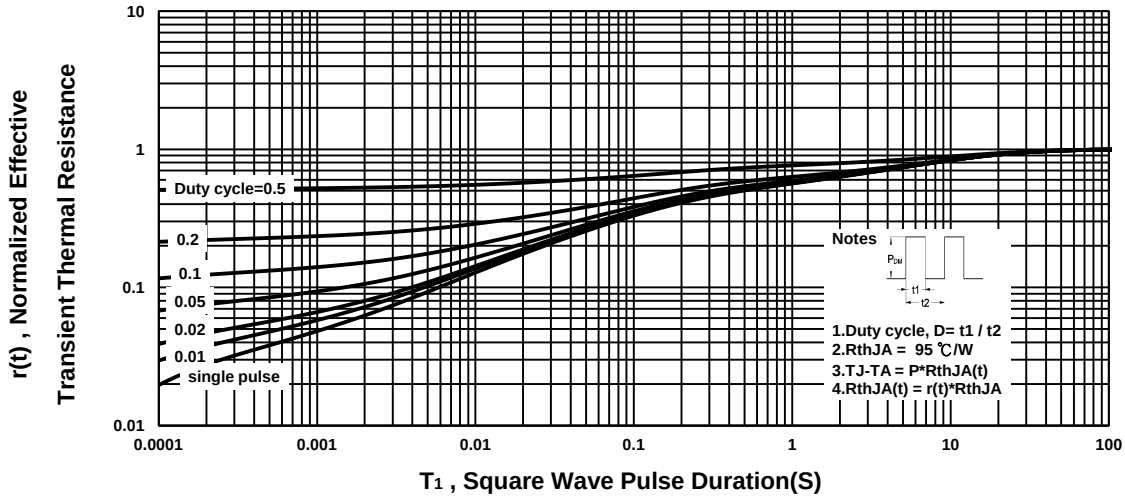
Safe Operating Area



Single Pulse Maximum Power Dissipation



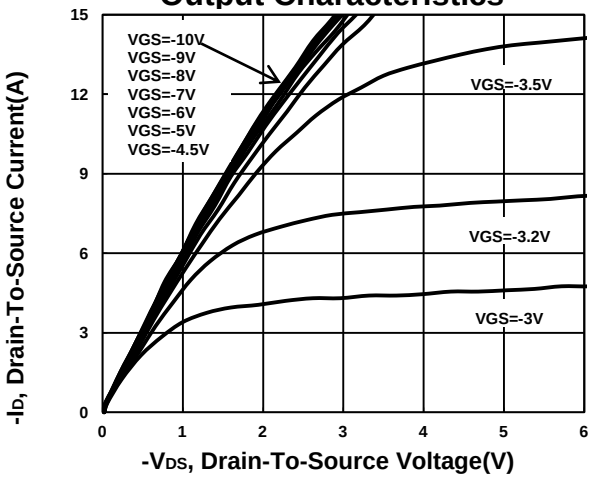
Transient Thermal Response Curve



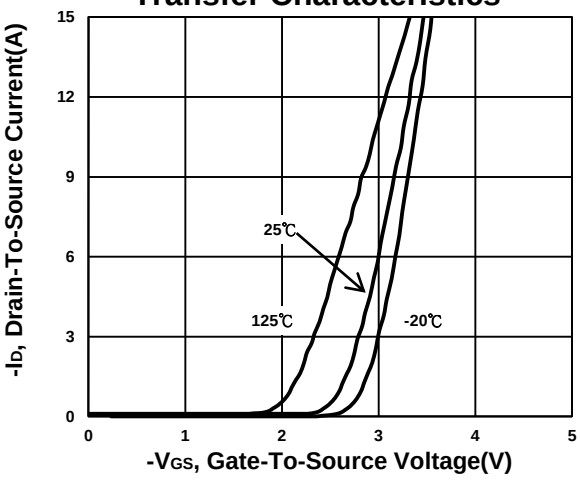
Typical performance characteristics

P-channel

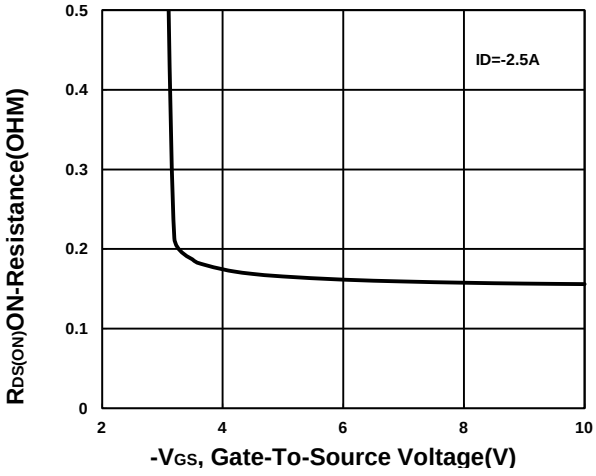
Output Characteristics



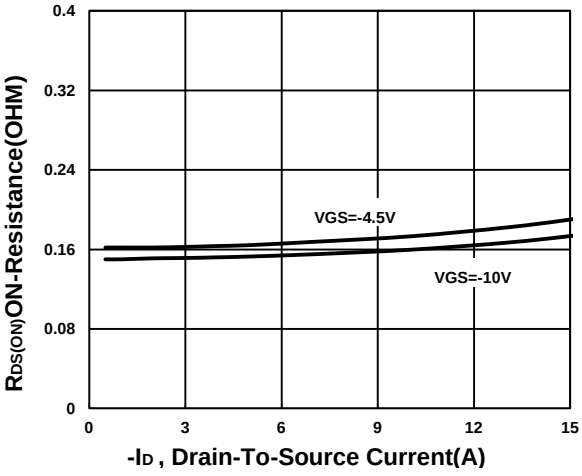
Transfer Characteristics



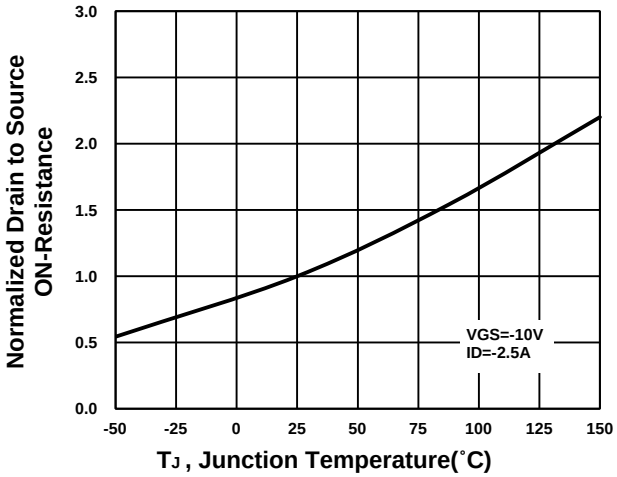
On-Resistance VS Gate-To-Source Voltage



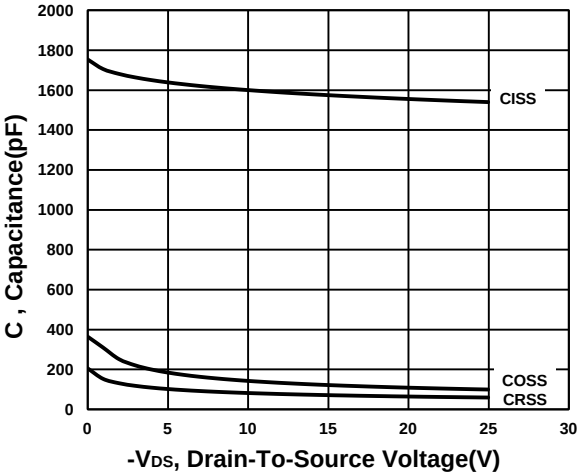
On-Resistance VS Drain Current



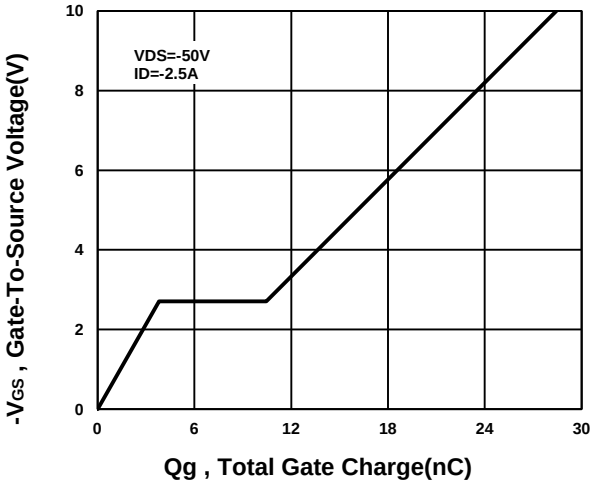
On-Resistance VS Temperature



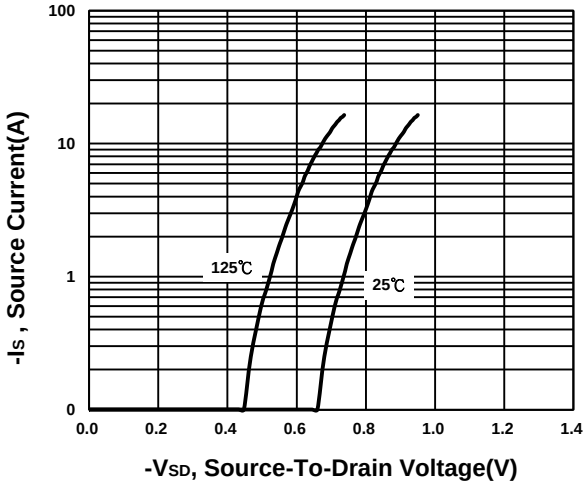
Capacitance Characteristic



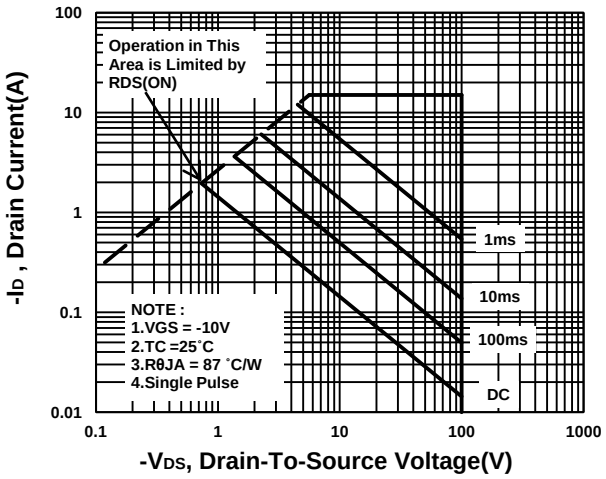
Gate charge Characteristics



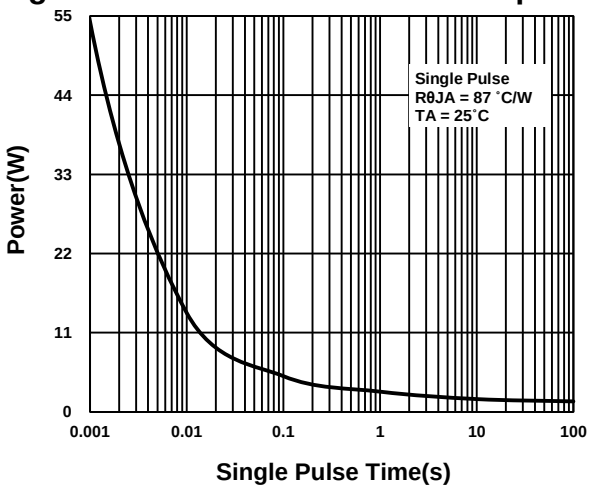
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