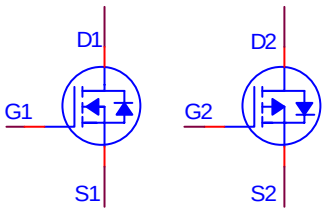
NIKO-SEM

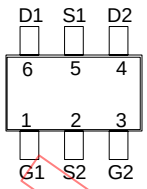
N- & P-Channel Enhancement Mode Field Effect Transistor

P5803NAG
TSOP-6
Lead-Free

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30	58mΩ	3.5A
P-Channel	-30	115mΩ	-2A





G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °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 °C	I_D	3.5	-2.3	A
	T_C = 70 °C		2.8	-1.8	
Pulsed Drain Current[1]		I_{DM}	10	-10	
Power Dissipation	T_C = 25 °C	P_D	1.15		W
	T_C = 70 °C		0.73		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°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	t≦5sec	$R_{\theta JA}$		110	°C / W
Junction-to-Ambient	Steady State	$R_{\theta JA}$		150	°C / W
Junction-to-Lead	Steady State	$R_{\theta JL}$		80	°C / W

[1]Pulse width limited by maximum junction temperature.
[2]Duty cycle ≤ 1%

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

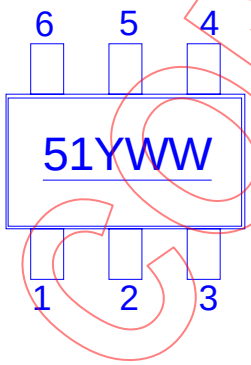
PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N-Ch	30			V
		V_{GS} = 0V, I_D = -250μA	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1	1.5	2.5	
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-1	-1.5	-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	8			A
		V_{DS} =-5V, V_{GS} = -10V	P-Ch	-8			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 2A	N-Ch		69	88	mΩ
		V_{GS} = -4.5V, I_D = -1.5A	P-Ch		145	185	
		V_{GS} = 10V, I_D = 3.5A	N-Ch		50	58	
		V_{GS} = -10V, I_D = -2.3A	P-Ch		95	115	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 2.5A	N-Ch		4.5		S
		V_{DS} = -5V, I_D = -2A	P-Ch		3		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 15V, f = 1MHz P-Channel V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	N-Ch		202		pF
			P-Ch		225		
Output Capacitance	C_{oss}		N-Ch		40		
			P-Ch		60		
Reverse Transfer Capacitance	C_{rss}		N-Ch		20		
			P-Ch		30		

Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 3.5A P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -2A	N-Ch P-Ch		2.6 2.8	3.9 4.2	nC
Gate-Source Charge[2]	Q_{gs}		N-Ch P-Ch		0.9 1.0		
Gate-Drain Charge[2]	Q_{gd}		N-Ch P-Ch		0.6 0.7		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V, R_L = 15Ω I_D ≅ 1A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -15V, R_L = 15Ω I_D ≅ -1A, V_{GS} = -10V, R_{GEN} = 6Ω	N-Ch P-Ch		7 8	11 12	nS
Rise Time[2]	t_r		N-Ch P-Ch		12 11	18 18	
Turn-Off Delay Time[2]	$t_{d(off)}$		N-Ch P-Ch		12 14	18 21	
Fall Time[2]	t_f		N-Ch P-Ch		7 8	11 12	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)							
Forward Voltage[1]	V_{SD}	I_F = 0.8A, V_{GS} = 0V	N-Ch			1.2	V
		I_F = -0.8A, V_{GS} = 0V	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	I_F = 0.8A, dI_F/dt = 100A / μS	N-Ch		40	80	nS
		I_F = -0.8A, dI_F/dt = 100A / μS	P-Ch		40	80	

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

REMARK: THIS PRODUCT MARKED WITH "51YWW"

Orders for parts with Lead-Free plating can be placed using the PXXXXXG parts name.



Marking Description:

5 - N+P MOSFET

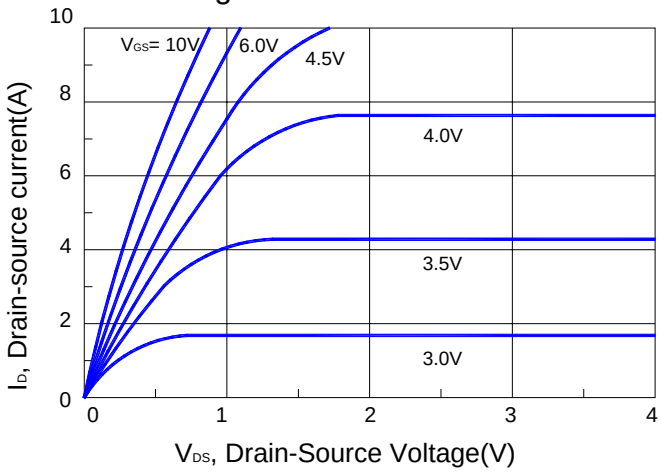
1 - Serial Number

Y - Year

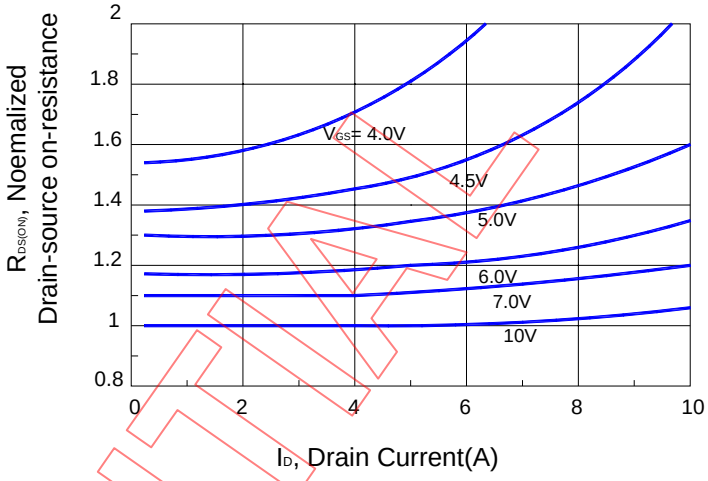
W - Week

N-CHANNEL

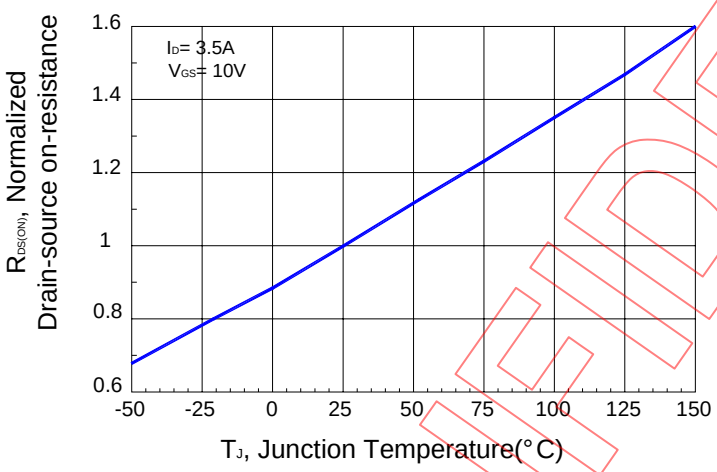
On-Region Characteristics.



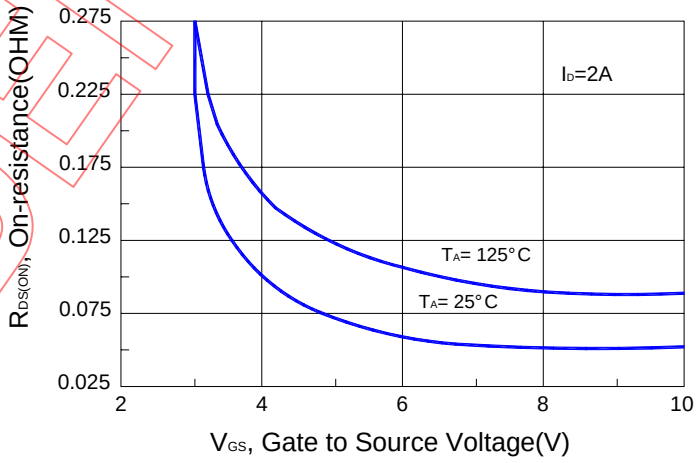
On-Resistance Variation with
Drain Current and Gate Voltage.



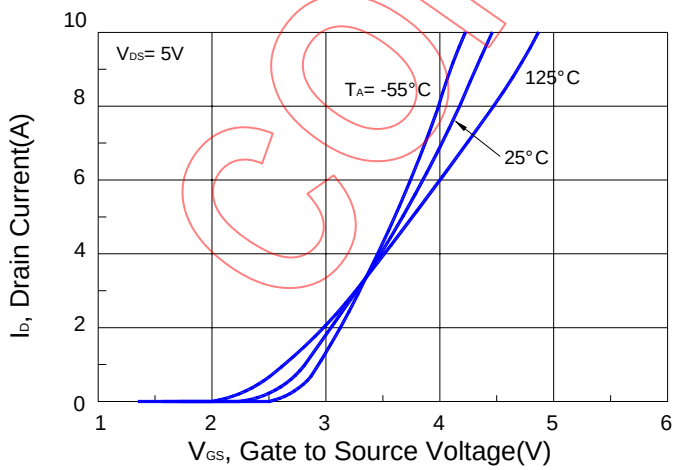
On-Resistance Variation with Temperature.



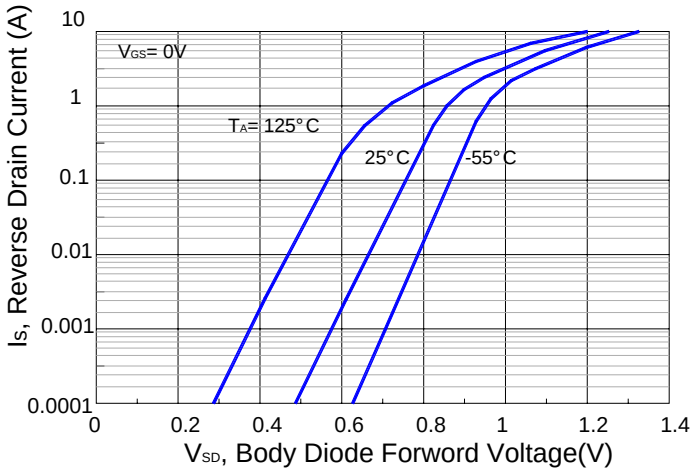
On-Resistance Variation with Gate-to-Source Voltage.



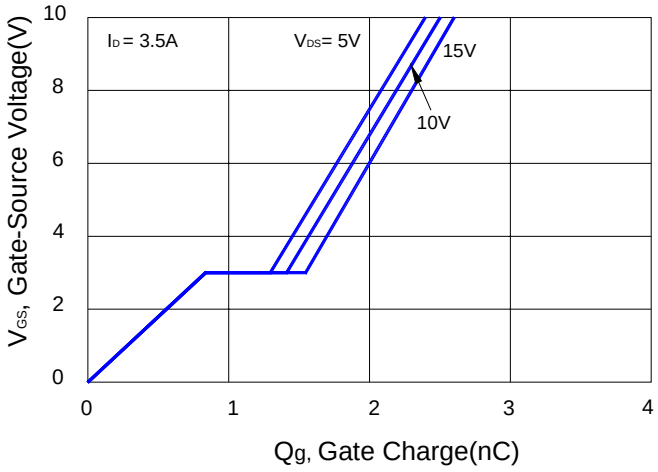
Transfer Characteristics.



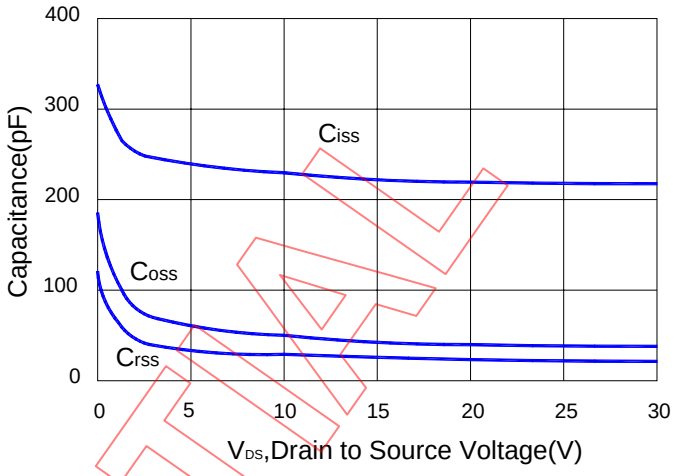
Body Diode Forword Voltage Variation with
Source Current and Temperature.



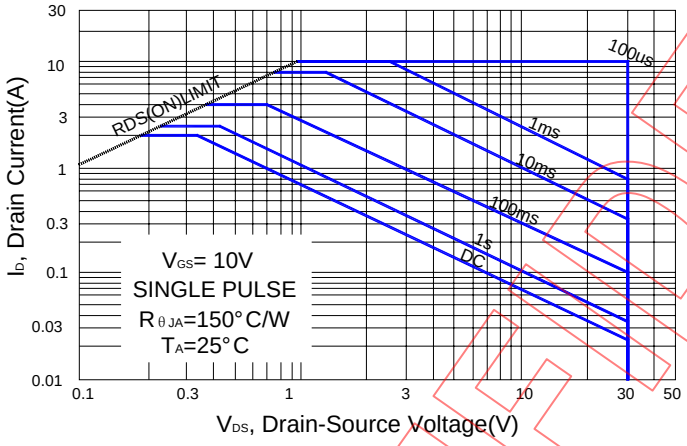
Gate-Charge Characteristics



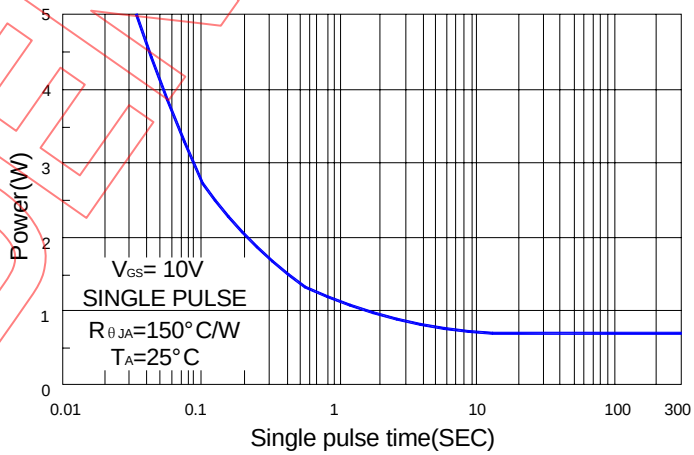
Capacitance Characteristics



Maximum Safe Operating Area.

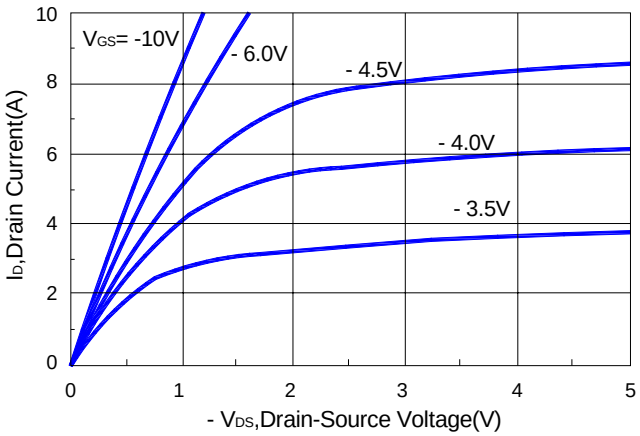


Single Pulse Maximum Power Dissipation.

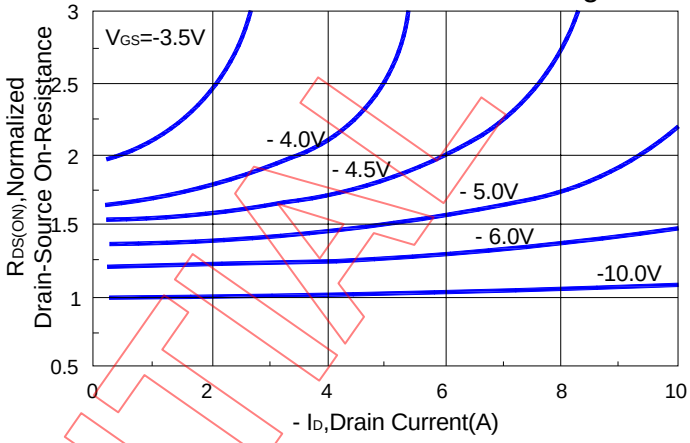


P-CHANNEL

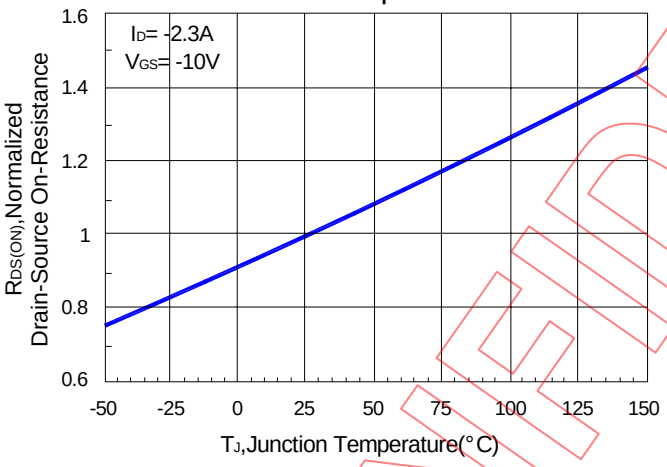
On-Region Characteristics



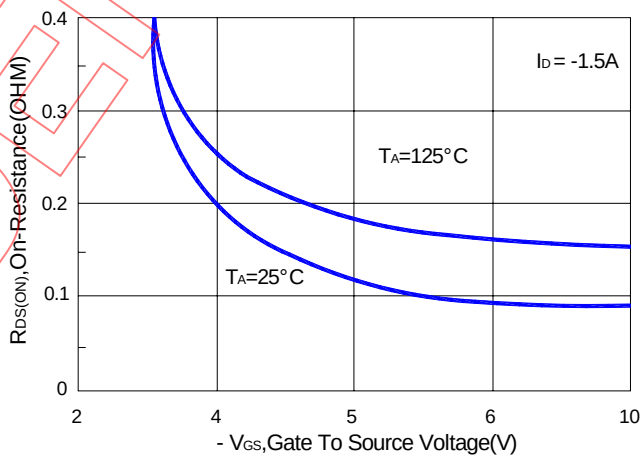
On-Resistance Variation with
Drain Current and Gate Voltage.



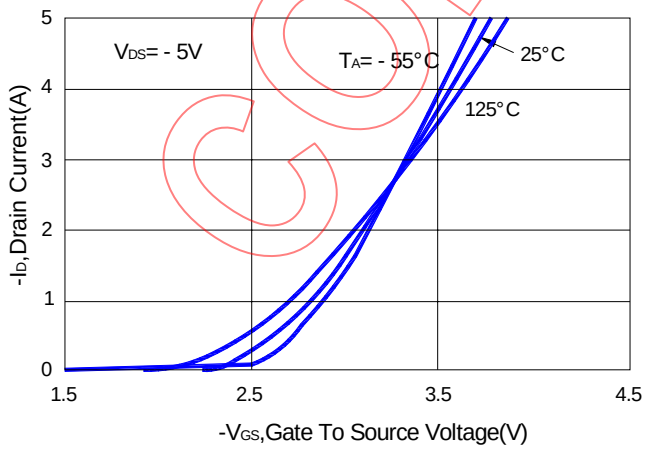
On-Resistance Variation
with Temperature



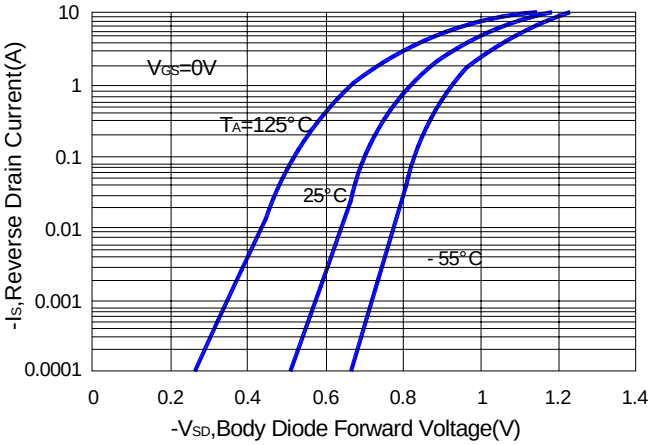
On-Resistance Variation with
Gate-to-Source Voltage.



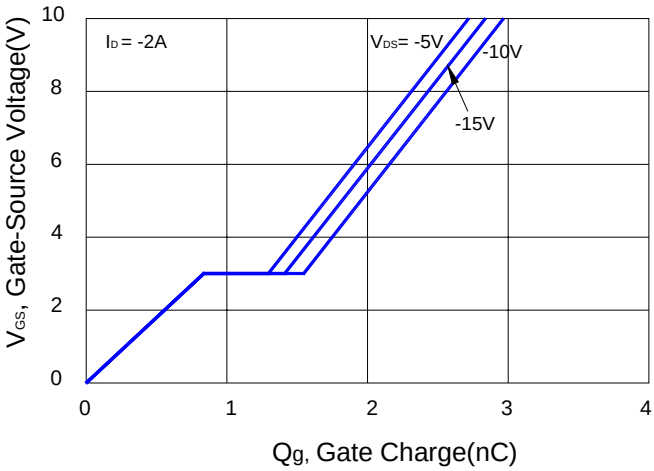
Transfer Characteristics



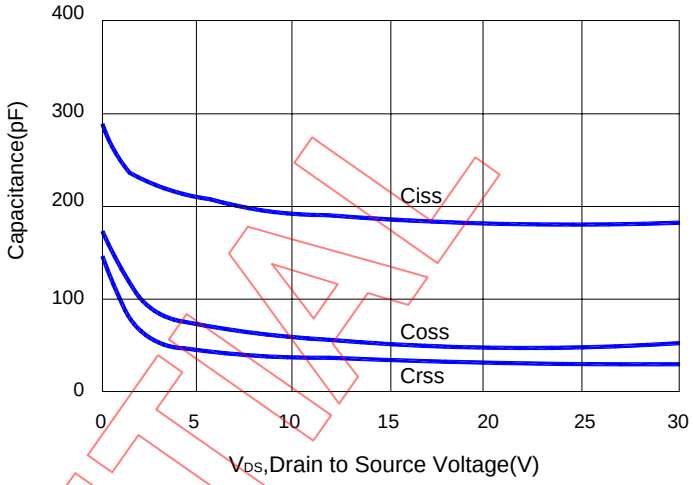
Body Diode Forward Voltage Variation
With Source Current and Temperature.



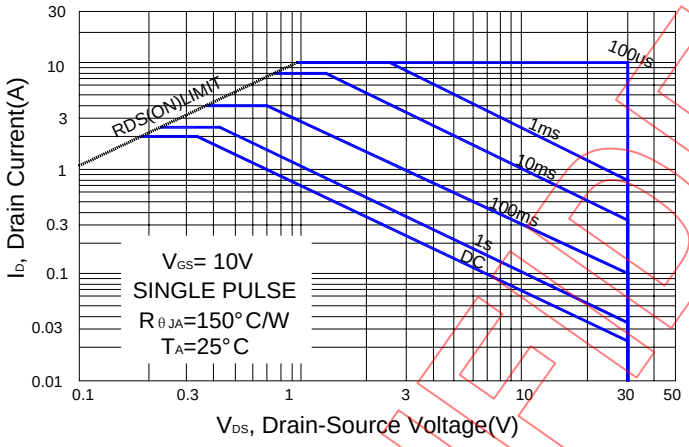
Gate-Charge Characteristics



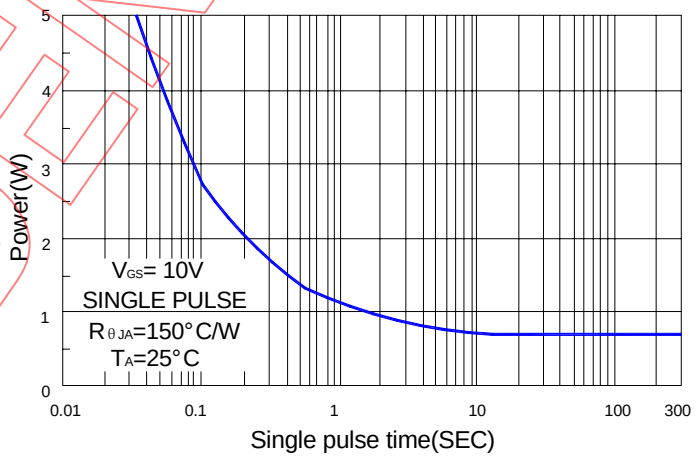
Capacitance Characteristics



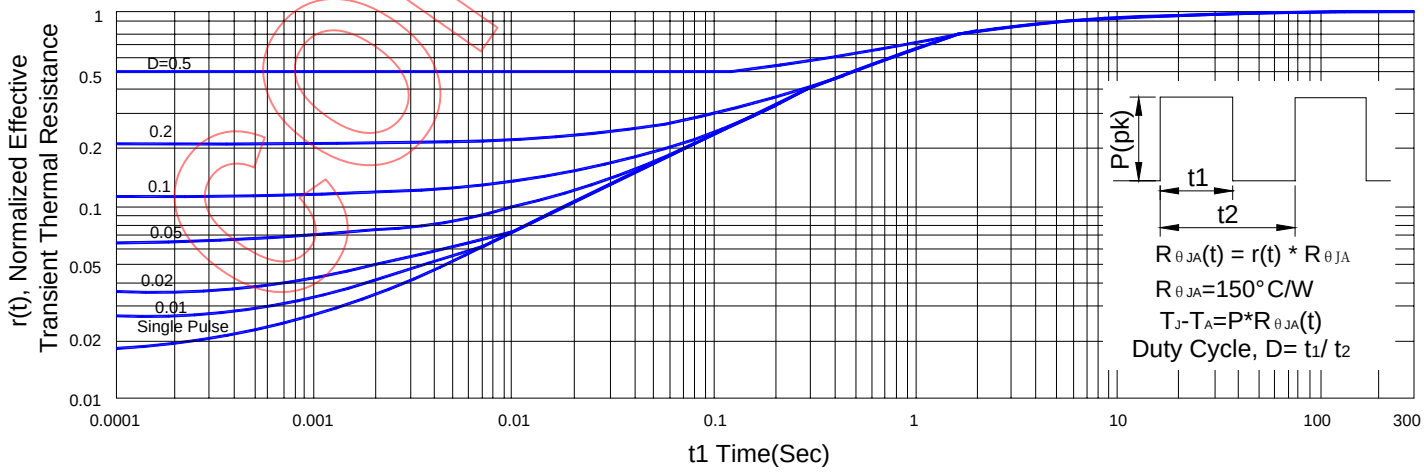
Maximum Safe Operating Area.



Single Pulse Maximum Power Dissipation.



Transient Thermal Response Curve.



TSOP- 6 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A		0.95		H	0.08	0.13	0.2
B	2.5	2.8	3.1	I	0.3		0.6
C	1.5	1.6	1.7	J			
D	2.7	2.9	3.1	K			
E	0.7		1.2	L			
F	0		0.15	M			
G	0.3	0.4	0.5	N