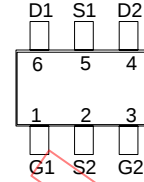
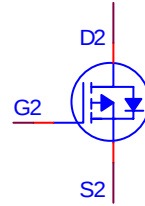
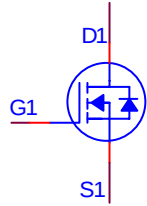


PRODUCT SUMMARY

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



G : GATE
D : DRAIN
S : SOURCE

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	3.5	-2.3	A
	$T_C = 70\text{ }^{\circ}\text{C}$		2.8	-1.8	
Pulsed Drain Current ¹		I_{DM}	10	-10	
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	1.15		W
	$T_C = 70\text{ }^{\circ}\text{C}$		0.73		
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	t 5sec	$R_{\theta JA}$		110	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient	Steady State	$R_{\theta JA}$		150	$^{\circ}\text{C} / \text{W}$
Junction-to-Lead	Steady State	$R_{\theta JL}$		80	$^{\circ}\text{C} / \text{W}$

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$, 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
		$V_{DS} = V_{GS}, I_D = -250\mu A$	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	8			A
		$V_{DS} = -5V, V_{GS} = -10V$	P-Ch	-8			
Drain-Source Resistance ¹	On-State $R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 2A$	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	N-Ch		202		pF
			P-Ch		225		
Output Capacitance	C_{oss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	N-Ch		40		
		P-Channel	P-Ch		60		
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$	N-Ch		20		
			P-Ch		30		

Total Gate Charge ²	Q _g	N-Channel V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 3.5A	N-Ch		2.6	3.9	nC
Gate-Source Charge ²	Q _{gs}		P-Channel	P-Ch		2.8	
Gate-Drain Charge ²	Q _{gd}	V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = -10V, I _D = -2A	N-Ch		0.9		
			P-Ch		1.0		
Turn-On Delay Time ²	t _{d(on)}	N-Channel	N-Ch		7	11	nS
Rise Time ²	t _r	V _{DS} = 15V, R _L = 15Ω	P-Ch		8	12	
Turn-Off Delay Time ²	t _{d(off)}	I _D ≅ 1A, V _{GS} = 10V, R _{GEN} = 6Ω	N-Ch		12	18	
Fall Time ²	t _f		P-Channel	P-Ch		11	
		V _{DS} = -15V, R _L = 15Ω	N-Ch		12	18	
			P-Ch		14	21	
		V _{DS} = -15V, R _L = 15Ω I _D ≅ -1A, V _{GS} = -10V, R _{GEN} = 6Ω	N-Ch		7	11	
			P-Ch		8	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	

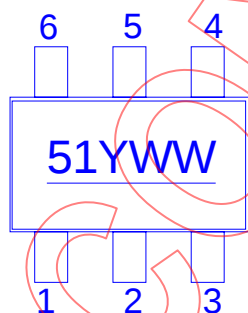
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

REMARK: THIS PRODUCT MARKED WITH "51YWW"

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



Marking Description:

5 - N+P MOSFET

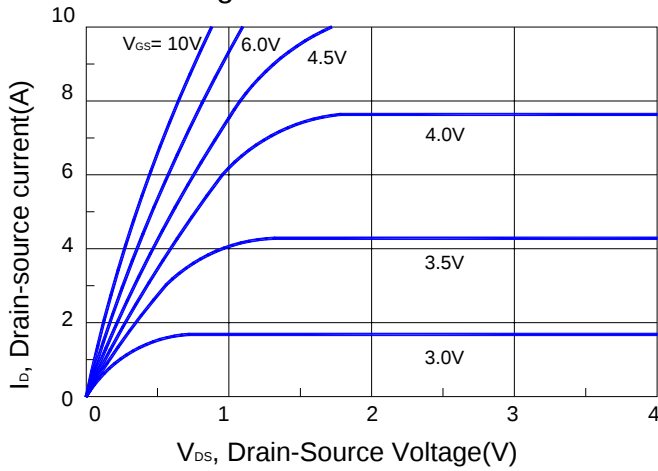
1 - Serial Number

Y - Year

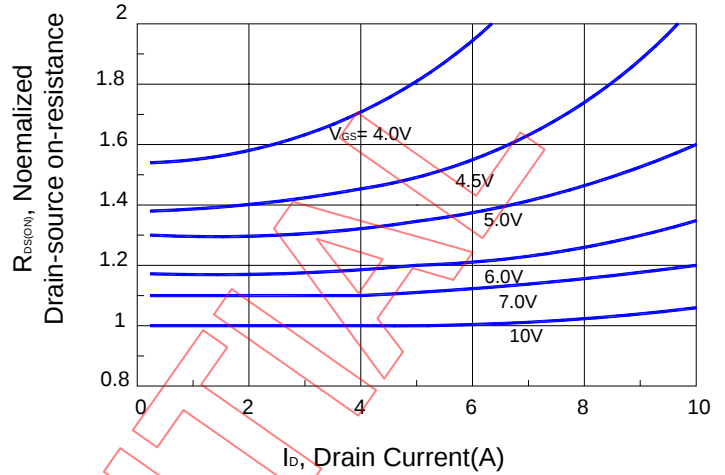
W - Week

N-CHANNEL

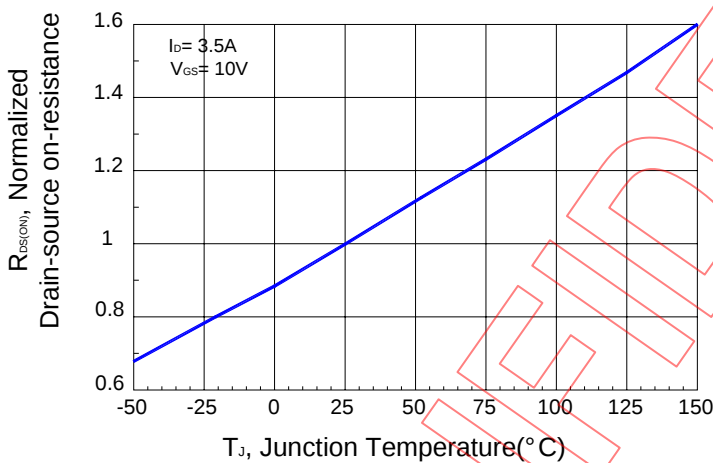
On-Region Characteristics.



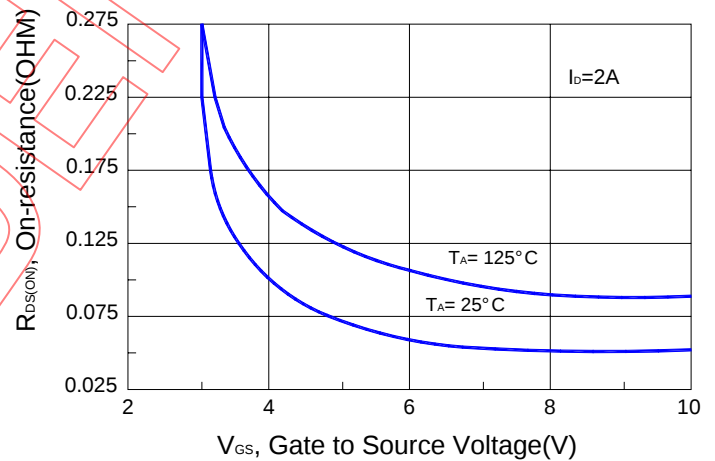
On-Resistance Variation with Drain Current and Gate Voltage.



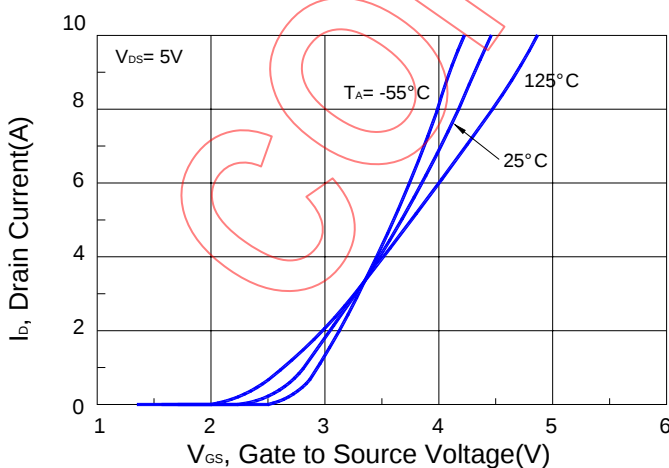
On-Resistance Variation with Temperature.



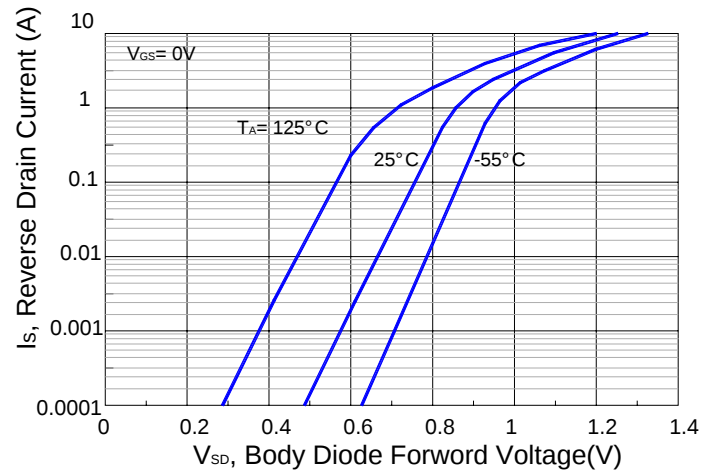
On-Resistance Variation with Gate-to-Source Voltage.



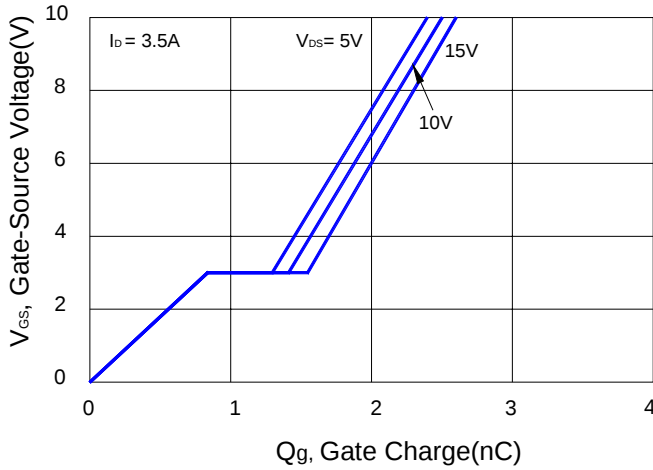
Transfer Characteristics.



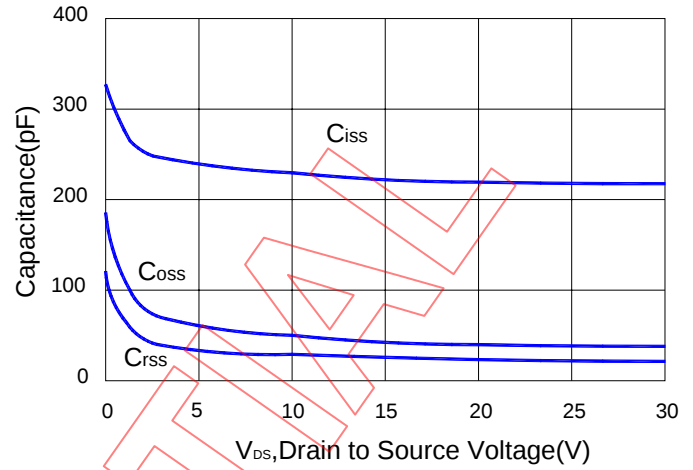
Body Diode Forward Voltage Variation with Source Current and Temperature.



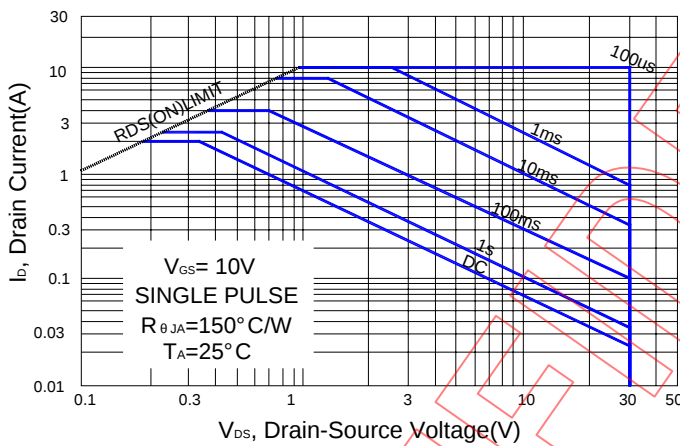
Gate-Charge Characteristics



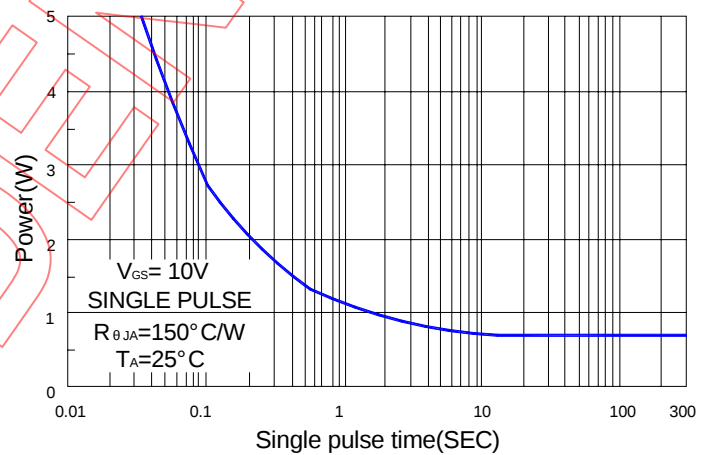
Capacitance Characteristics



Maximum Safe Operating Area.

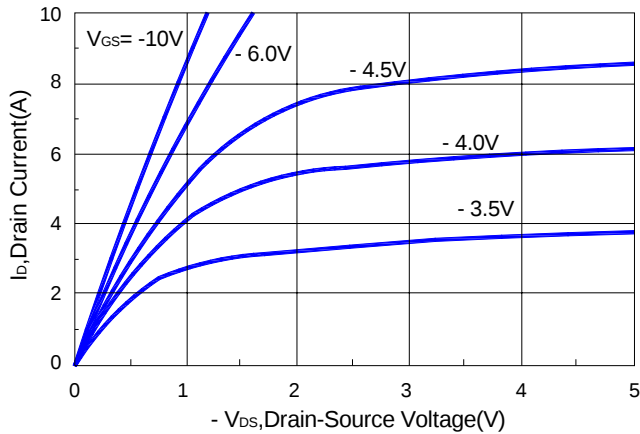


Single Pulse Maximum Power Dissipation.

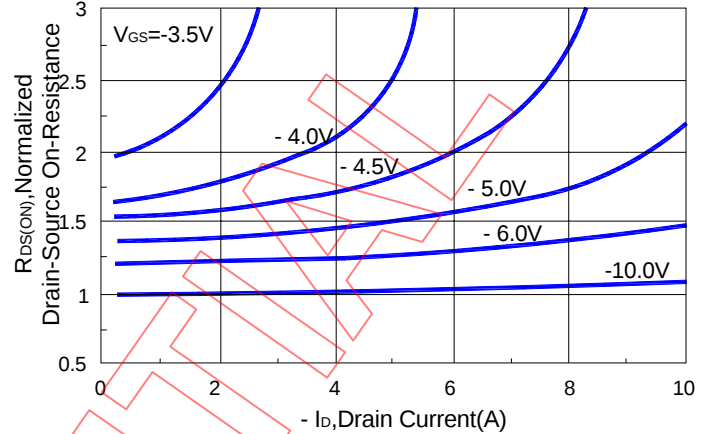


P-CHANNEL

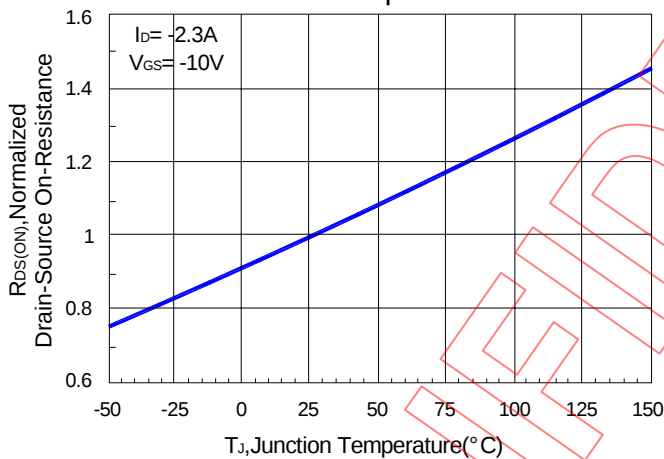
On-Region Characteristics



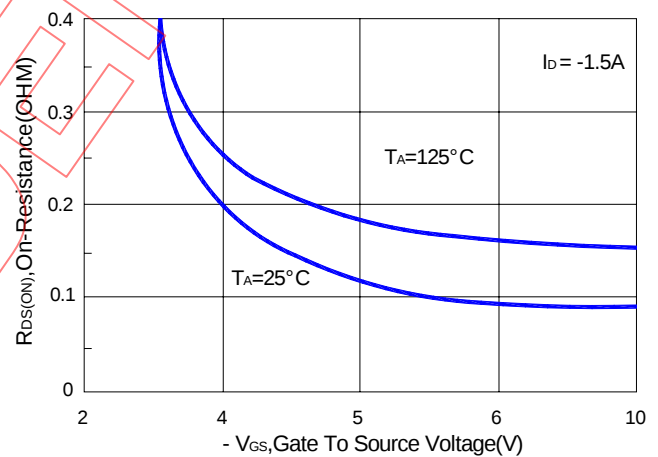
On-Resistance Variation with
Drain Current and Gate Voltage.



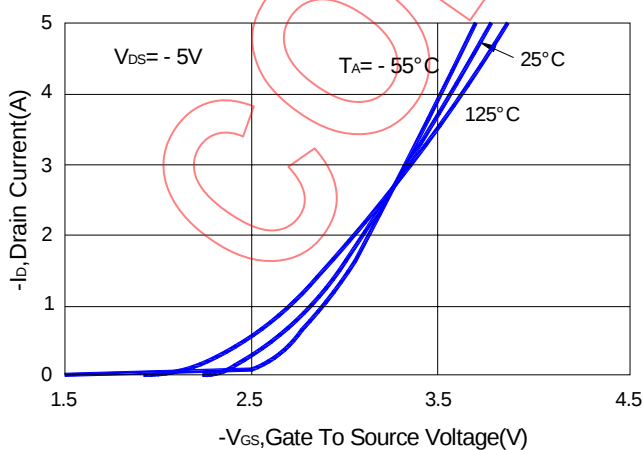
On-Resistance Variation
with Temperature



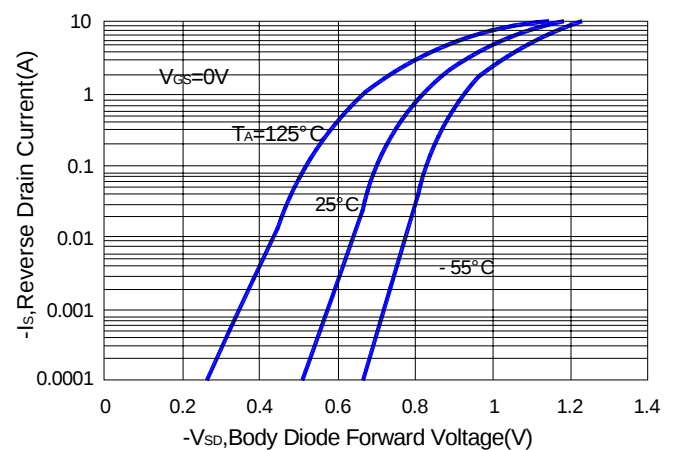
On-Resistance Variation with
Gate-to-Source Voltage.



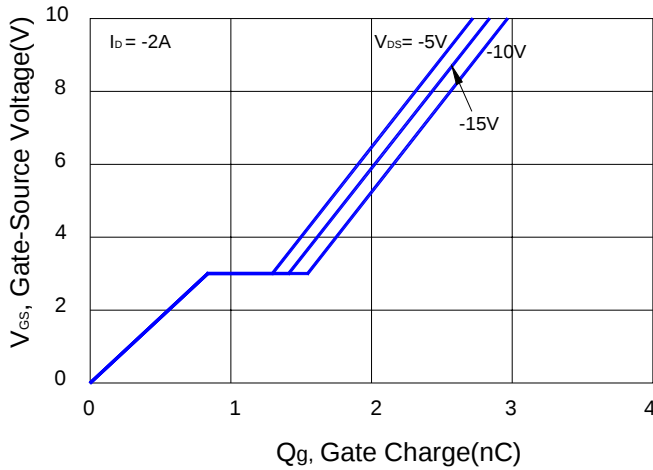
Transfer Characteristics



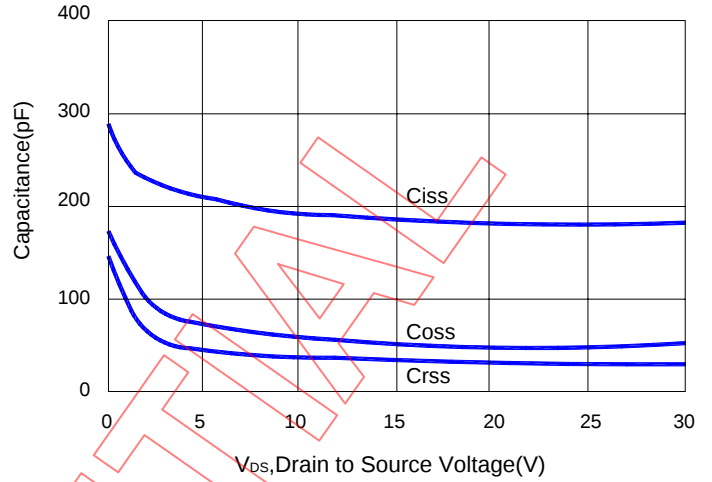
Body Diode Forward Voltage Variation
With Source Current and Temperature.



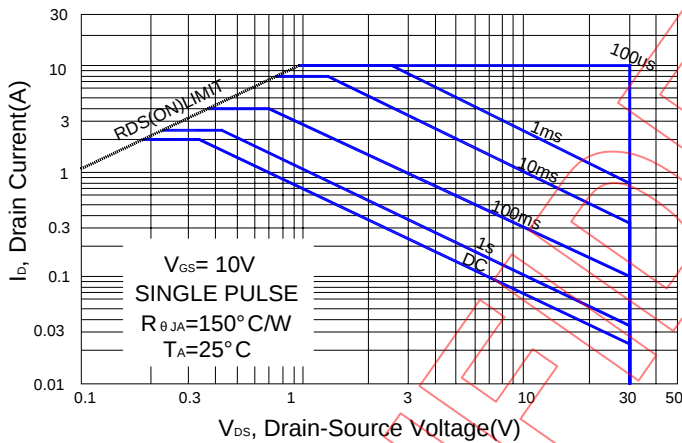
Gate-Charge Characteristics



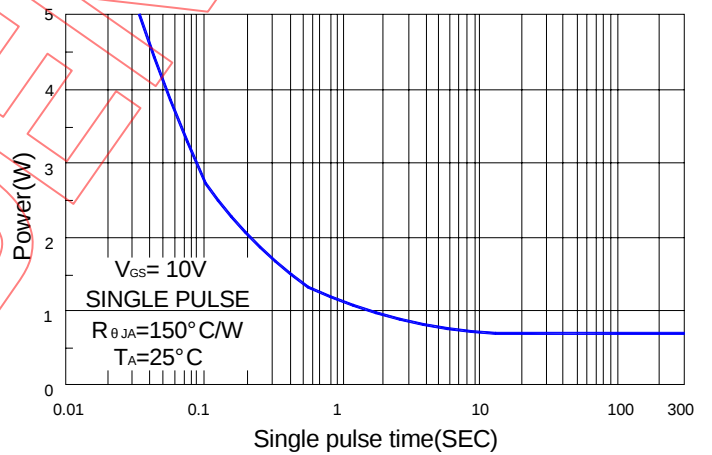
Capacitance Characteristics



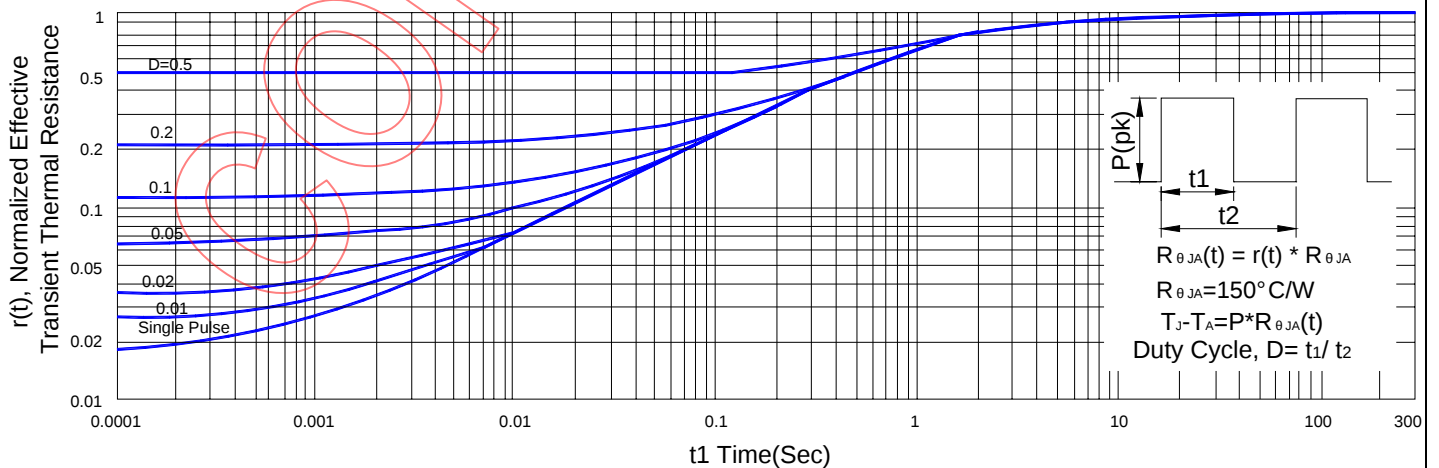
Maximum Safe Operating Area.



Single Pulse Maximum Power Dissipation.



Transient Thermal Response Curve.



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			

