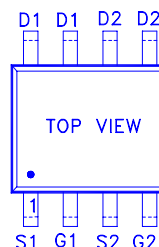
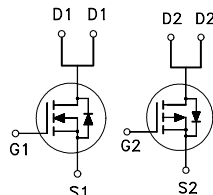


**PRODUCT SUMMARY**

	$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
N-Channel	30	65m	4A
P-Channel	-30	150m	-3A



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		$V_{GS}$	$\pm 20$	$\pm 20$	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	$I_D$	4	-3	A
	$T_C = 70\text{ }^\circ\text{C}$		3	-2	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	10	-10	
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 ( <sup>1</sup> / <sub>16</sub> " from case for 10 sec.)		$T_L$	275		

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		110	$^\circ\text{C} / \text{W}$

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>Duty cycle  $\leq 1\%$

**ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25 °C, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
<b>STATIC</b>							
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	N-Ch	30			V
		V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	P-Ch	-30			
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	N-Ch	0.9	1.5	2.5	V
		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	P-Ch	-0.9	-1.5	-2.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	N-Ch			±100	nA
		V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	P-Ch			±100	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V	N-Ch			1	μA
		V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V	P-Ch			-1	
		V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55 °C	N-Ch			10	
		V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55 °C	P-Ch			-10	
On-State Drain Current <sup>1</sup>	I <sub>D(ON)</sub>	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 10V	N-Ch	10			A
		V <sub>DS</sub> = -5V, V <sub>GS</sub> = -10V	P-Ch	-10			
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3A	N-Ch		72	120	m
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A	P-Ch		170	250	
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 4A	N-Ch		48	65	
		V <sub>GS</sub> = -10V, I <sub>D</sub> = -3A	P-Ch		100	150	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 3A	N-Ch		6		S
		V <sub>DS</sub> = -10V, I <sub>D</sub> = -2A	P-Ch		3		
<b>DYNAMIC</b>							
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	N-Channel V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A	N-Ch		5	7.5	nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>		P-Ch		5.5	6.6	
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>	P-Channel V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , V <sub>GS</sub> = -10V, I <sub>D</sub> = -2A	N-Ch		0.8		
			P-Ch		1.2		

Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	N-Channel $V_{DS} = 15V, R_L = 15$ $I_D \cong 1A, V_{GS} = 10V, R_{GEN} = 6$	N-Ch		7	11	nS
			P-Ch		8	12	
Rise Time <sup>2</sup>	$t_r$		N-Ch		12	18	
			P-Ch		11	18	
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$	P-Channel $V_{DS} = -15V, R_L = 15$ $I_D \cong -1A, V_{GS} = -10V, R_{GEN} = 6$	N-Ch		12	18	
			P-Ch		14	21	
Fall Time <sup>2</sup>	$t_f$		N-Ch		7	11	
			P-Ch		8	12	

**SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>c</sub> = 25 °C)**

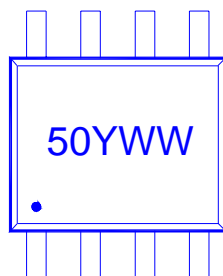
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = 0.9A, V_{GS} = 0V$	N-Ch			1.2	V
		$I_F = -0.9A, V_{GS} = 0V$	P-Ch			-1.2	
Reverse Recovery Time	$t_{rr}$	$I_F = 0.9A, di_F/dt = 100A / \mu S$	N-Ch		40	80	nS
		$I_F = -0.9A, di_F/dt = 100A / \mu S$	P-Ch		40	80	

<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Pulse width limited by maximum junction temperature.

**REMARK: THIS PRODUCT MARKED WITH "50YWW"**



**Marking Description:**

5 - N+P MOSFET

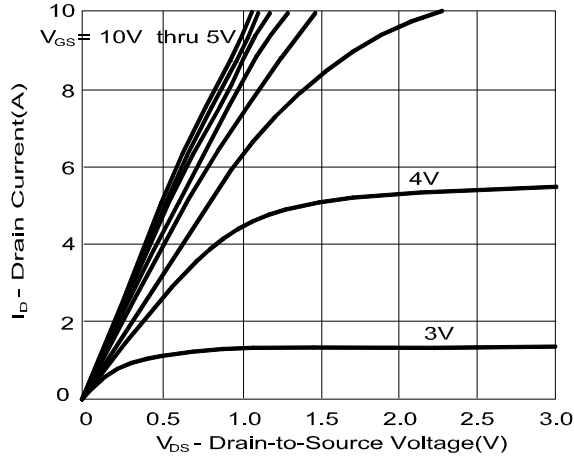
0 - Serial Number

Y - Year

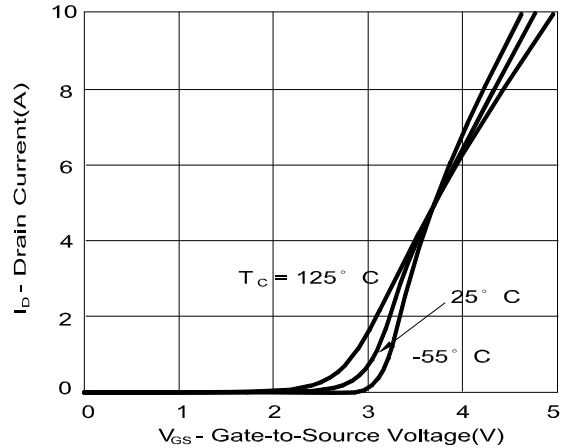
W - Week

**N-CHANNEL**

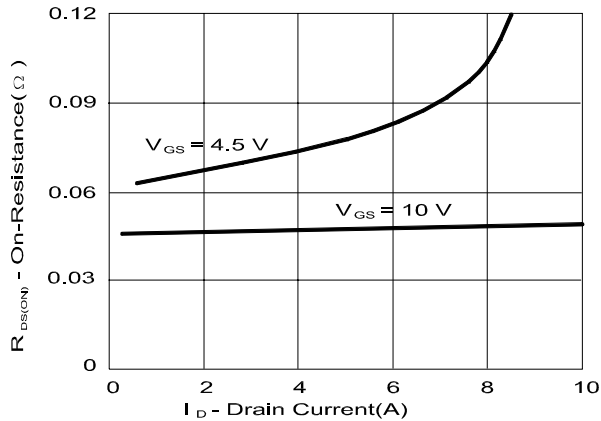
Output Characteristics



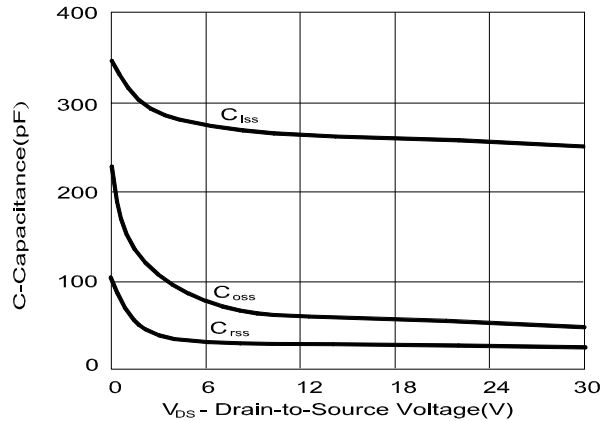
Transfer Characteristics



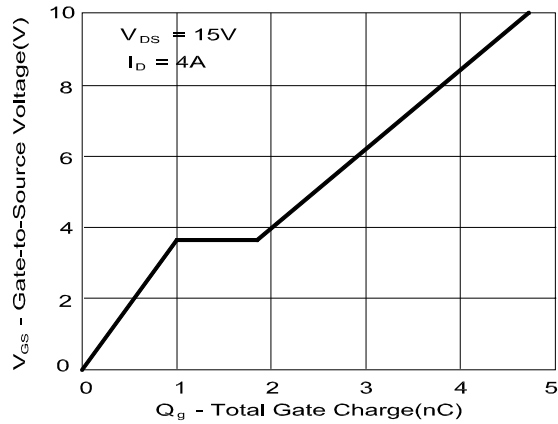
On-Resistance vs. Drain Current



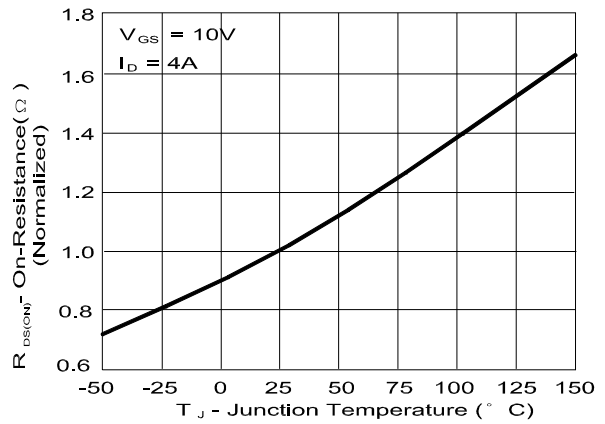
Capacitance

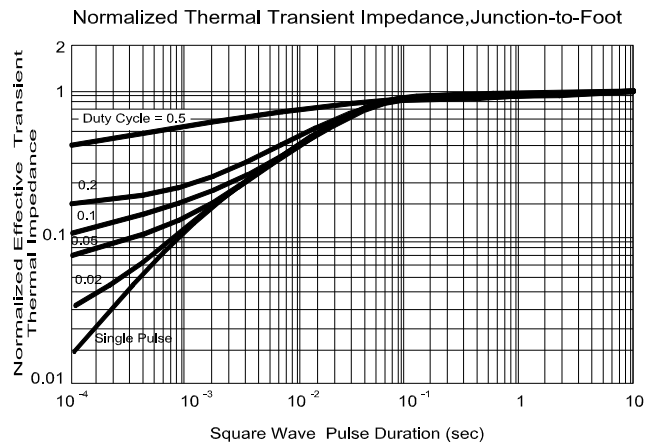
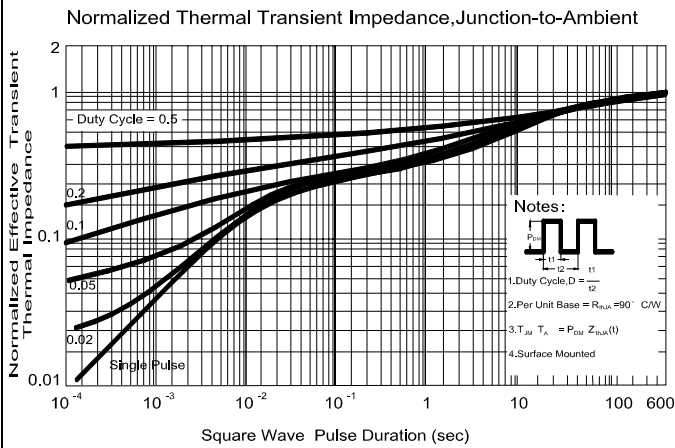
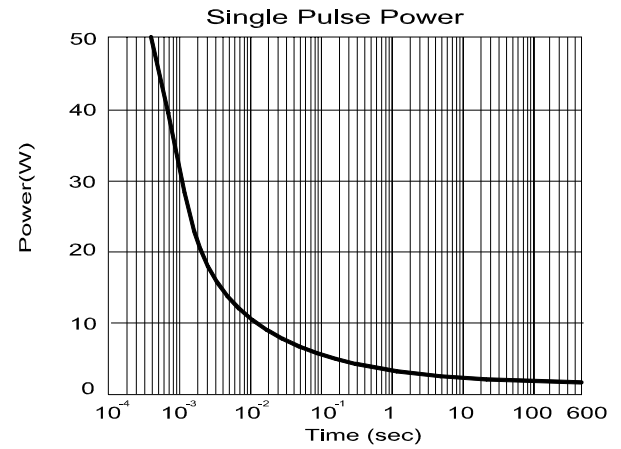
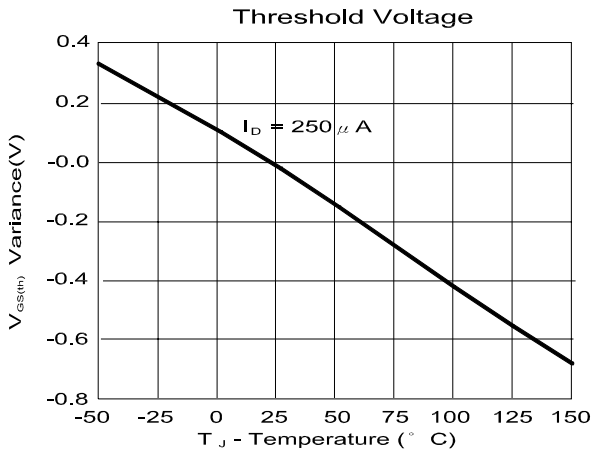
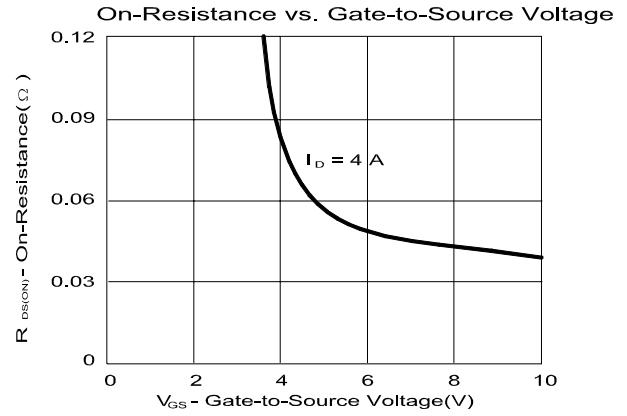
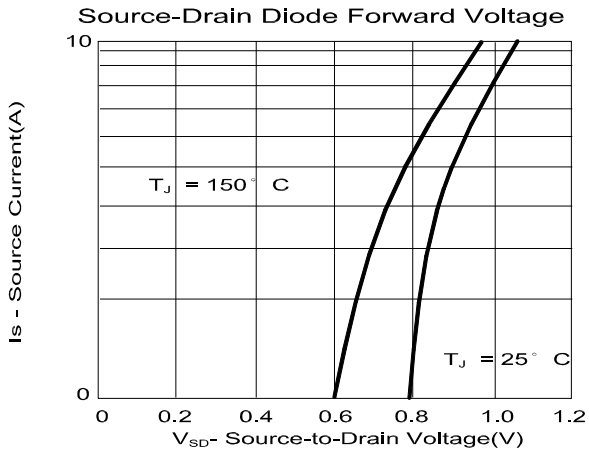


Gate Charge



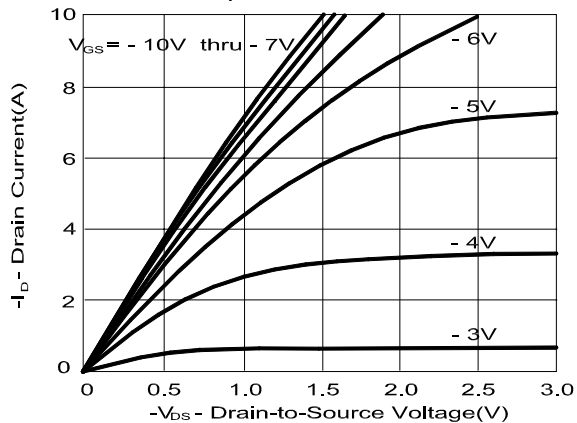
On-Resistance vs. Junction Temperature



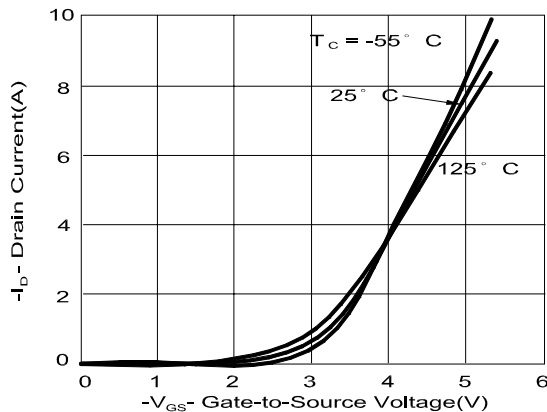


**P-CHANNEL**

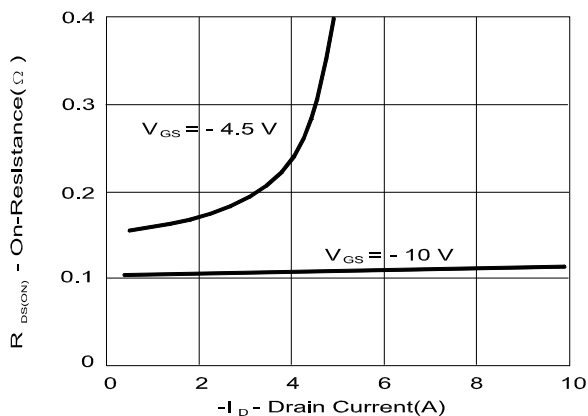
Output Characteristics



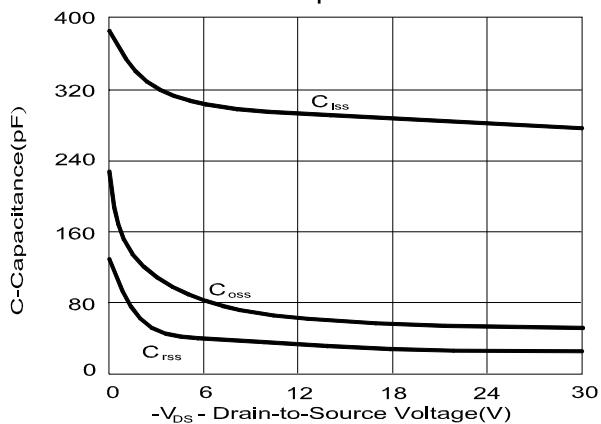
Transfer Characteristics



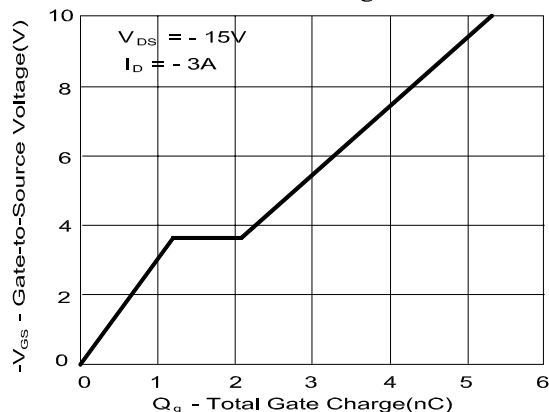
On-Resistance vs. Drain Current



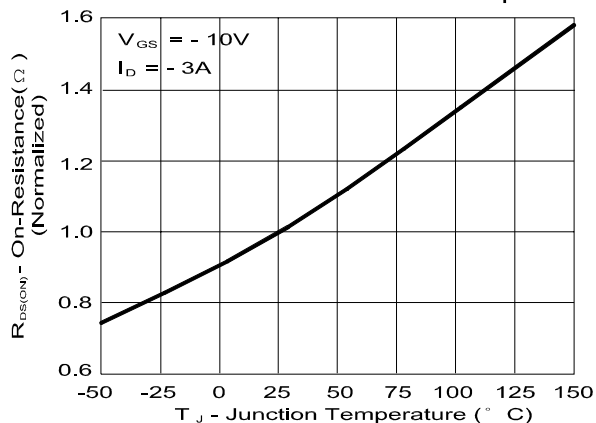
Capacitance

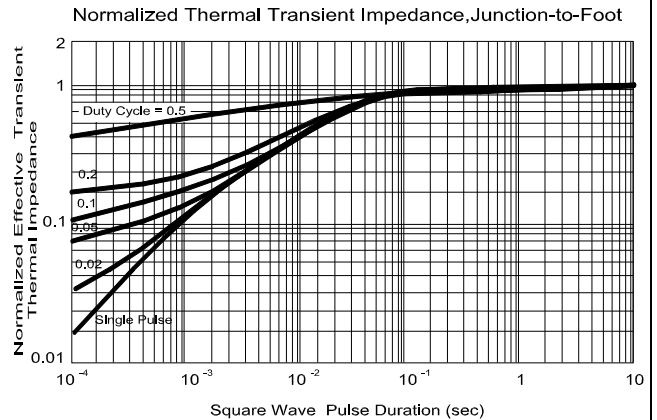
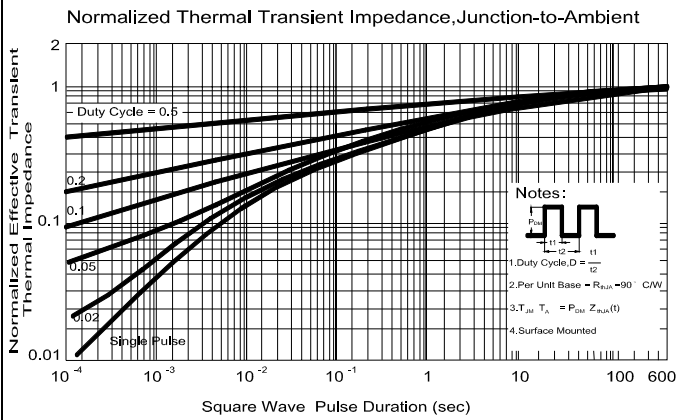
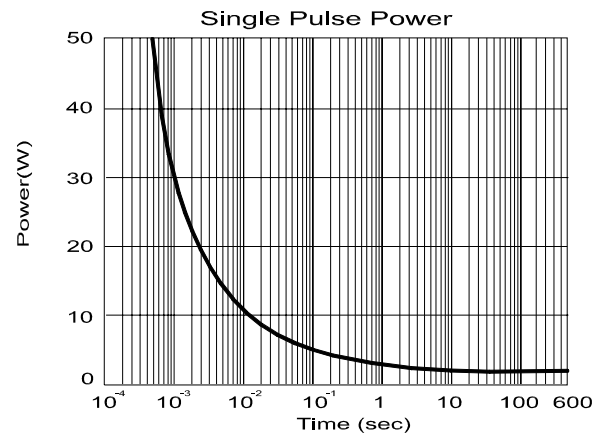
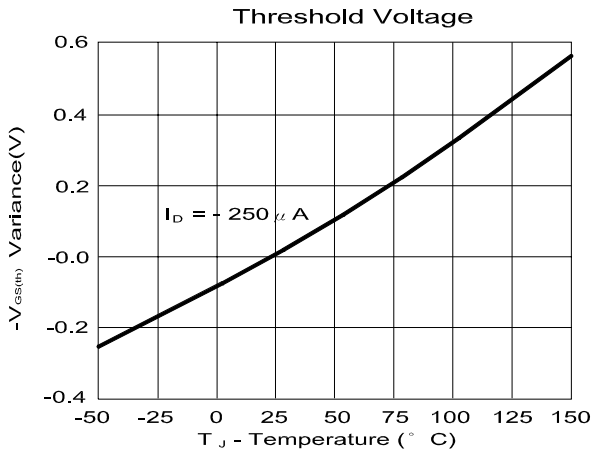
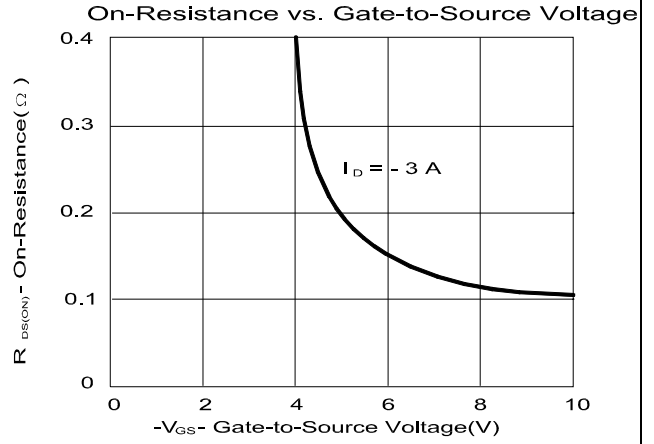
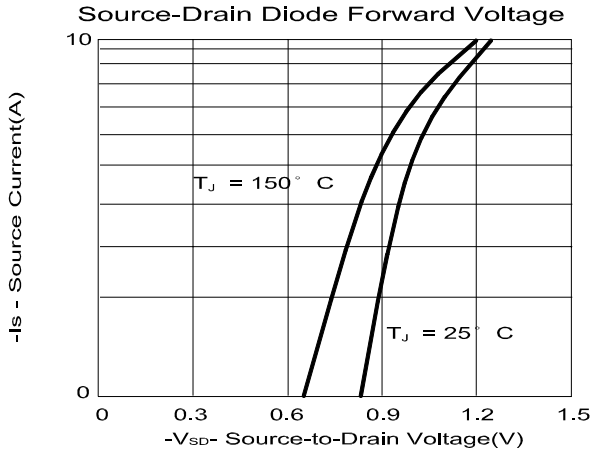


Gate Charge



On-Resistance vs. Junction Temperature





**TSOPJW-8 MECHANICAL DATA**

Dimension	mm			Dimension	Mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	2.95	3.05	3.10	H	0.30	0.45	0.60
B	2.30	2.40	2.50	I			
C	2.65	2.85	3.05	J	7° NOM		
D	0.25	0.32	0.40	K	0.04 REF.		
E	0.65BSC			L	0.1	0.15	0.20
F	0.925		1.00	M			
G	0.01		0.1	N			

