

DESCRIPTION

The SMC4549 is the N+P-Channel Complementary mode power field effect transistor is produced using high cell density. advanced trench technology to provide excellent $R_{DS(ON)}$.

This device is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters applications.

SMC4549M-TRG ROHS Compliant This is Halogen Free



FEATURE

N-Channel

- ◆ $30V / 8.0A, R_{DS(ON)} = 18m\Omega (typ.) @ V_{GS} = 10V$
- ◆ $30V / 6.0A, R_{DS(ON)} = 21m\Omega (typ.) @ V_{GS} = 4.5V$

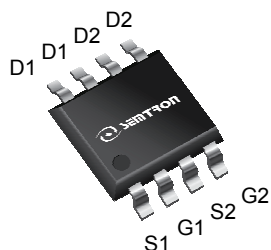
P-Channel

- ◆ $-30V / -7.0A, R_{DS(ON)} = 21m\Omega (typ.) @ V_{GS} = -10V$
- ◆ $-30V / -5.5A, R_{DS(ON)} = 27m\Omega (typ.) @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Fast switching performance.

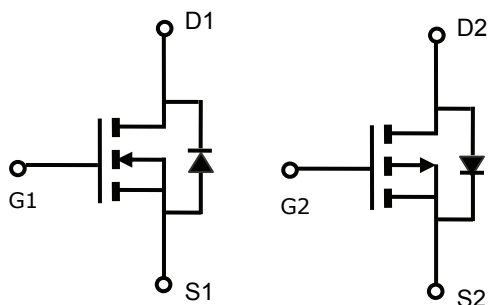
APPLICATIONS

- ◆ High Frequency Point-of-Load Synchronous
- ◆ Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- ◆ High Frequency Synchronous Buck DC-DC Converter.

PIN CONFIGURATION



SOP-8
Top View



N-Channle

P-Channle

PART NUMBER INFORMATION

SMC a 4549 b M c - TR d G e	a : Company name. b : Product Serial number. c : Package code d : Handling code e : Green produce code
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ORDERING INFORMATION

Part Number	Package Code	Handling Code	Shipping
SMC4549M-TRG	M : SOP-8	TR : Tape&Reel	2.5K/Reel

※ Year Code : 0 ~ 9, 2010 : 0

※ Week Code : 01 ~ 02 : A, 03 ~ 04 = B...

※ SOP-8 : Only available in tape and reel packaging.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter		Typical		Unit
			N	P	
V _{DSS}	Drain-Source Voltage		30	-30	V
V _{GSS}	Gate-Source Voltage		±20	±20	V
I _D	Continuous Drain Current, V _{GS} =10V ^A	T _A =25°C	8.0	-7.0	A
		T _A =70°C	6.5	-5.8	
I _{DM}	Pulsed Drain Current ^B		38	-27	A
E _{AS}	Single Pulse Avalanche Energy L=0.1mH ^C		145	168	mJ
P _D	Power Dissipation	T _A =25°C	2.0	2.0	W
		T _A =70°C	1.4	1.4	
T _J	Operation Junction Temperature		-55/150		°C
T _{STG}	Storage Temperature Range		-55/150		°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL DATA

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient ^A Steady-State			85	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Lead ^A Steady-State			60	$^\circ\text{C}/\text{W}$

■ N-CHANNEL ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0		2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =25°C			1	μA
		V _{DS} =24V, V _{GS} =0V T _J =55°C			5	
R _{DS(ON)}	Drain-source On-Resistance ^B	V _{GS} =10V, I _D =8.0A V _{GS} =4.5V, I _D =6.0A		18 21	23 26	mΩ
G _{fs}	Forward Transconductance	V _{DS} =10V, I _D =6A		5.6		S
Source-Drain Doide						
V _{SD}	Diode Forward Voltage ^B	I _S =1.7A, V _{GS} =0V		0.75	1.0	V
I _S	Continuous Source Current ^{AD}				5.8	A
Dynamic Parameters						
Q _g (4.5V)	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V I _D =5.8A		5	7.2	nC
Q _{gs}	Gate-Source Charge			1.6		
Q _{gd}	Gate-Drain Charge			1.9		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V f =1MHz		420	586	pF
C _{oss}	Output Capacitance			65		
C _{rss}	Reverse Transfer Capacitance			52		
t _{d(on)}	Turn-On Time	V _{DD} =15V, V _{GEN} =10V, R _G =3.3Ω,		2.2	4.4	nS
t _r				38.7	68.8	
t _{d(off)}	Turn-Off Time			12.5	25	
t _f				4.8	9.6	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
- The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH$.
- The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

The products and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date

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■ P-CHANNEL ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	-1.0		-2.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V T _J =25°C			-1	μA
		V _{DS} =24V, V _{GS} =0V T _J =55°C			-5	
R _{DS(ON)}	Drain-source On-Resistance ^B	V _{GS} =-10V, I _D =-7.0 A V _{GS} =-4.5V, I _D =-5.5A		21 27	26 32	mΩ
G _{fs}	Forward Transconductance	V _{DS} =-5.0V, I _D =-6A		17		S
Source-Drain Doide						
V _{SD}	Diode Forward Voltage ^B	I _S =-1.0A, V _{GS} =0V			-1.2	V
I _S	Continuous Source Current ^{AD}				-6.0	A
Dynamic Parameters						
Q _g (-4.5V)	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V I _D =-6.0A		12.5		nC
Q _{gs}	Gate-Source Charge			4.7		
Q _{gd}	Gate-Drain Charge			4.7		
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V f =1MHz		1365		pF
C _{oss}	Output Capacitance			198		
C _{rss}	Reverse Transfer Capacitance			160		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, V _{GEN} =-10V, R _G =3.3Ω,		4.7		nS
t _r				14.8		
t _{d(off)}	Turn-Off Time			40		
t _f				19.7		

Note:

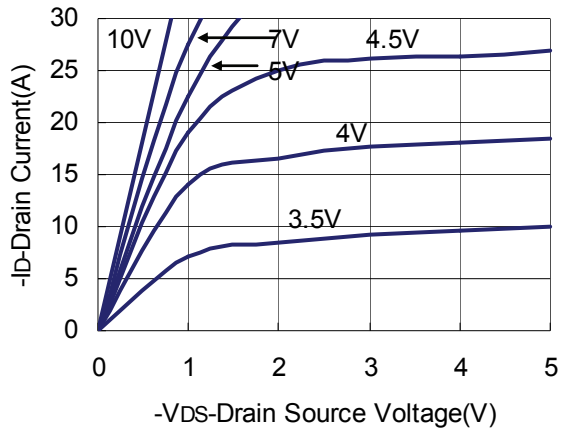
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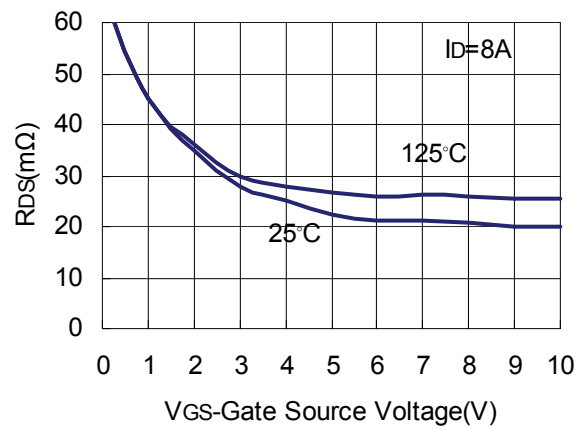
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TYPICAL CHARACTERISTICS(N-Channel)

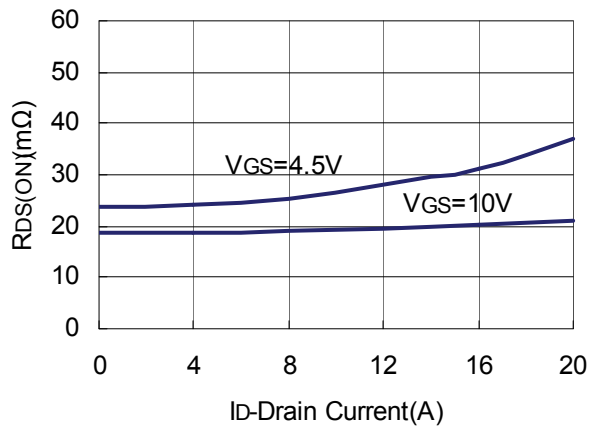
Output Characteristics



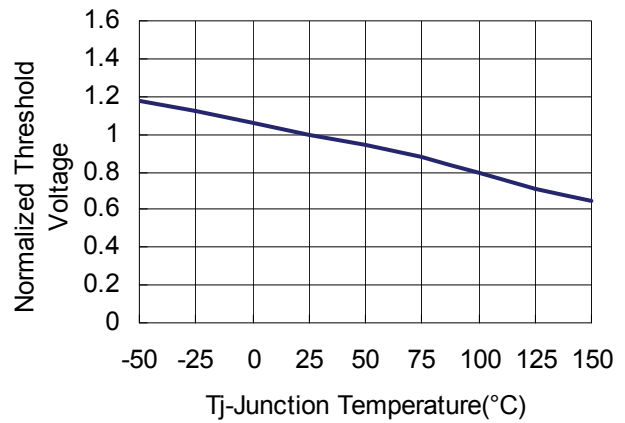
Drain-Source On Resistance



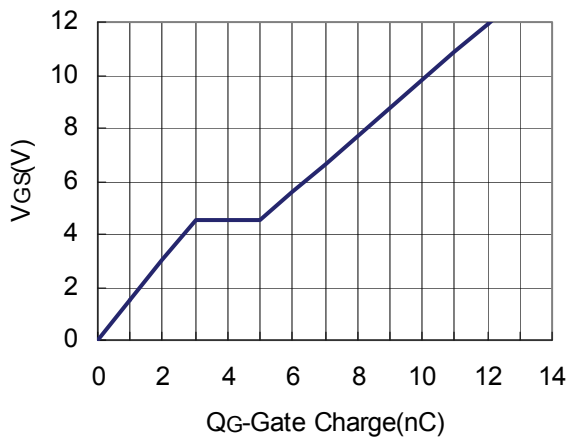
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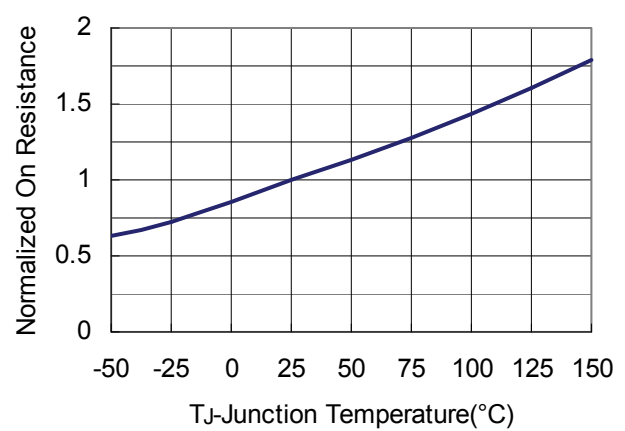
Gate Threshold Voltage



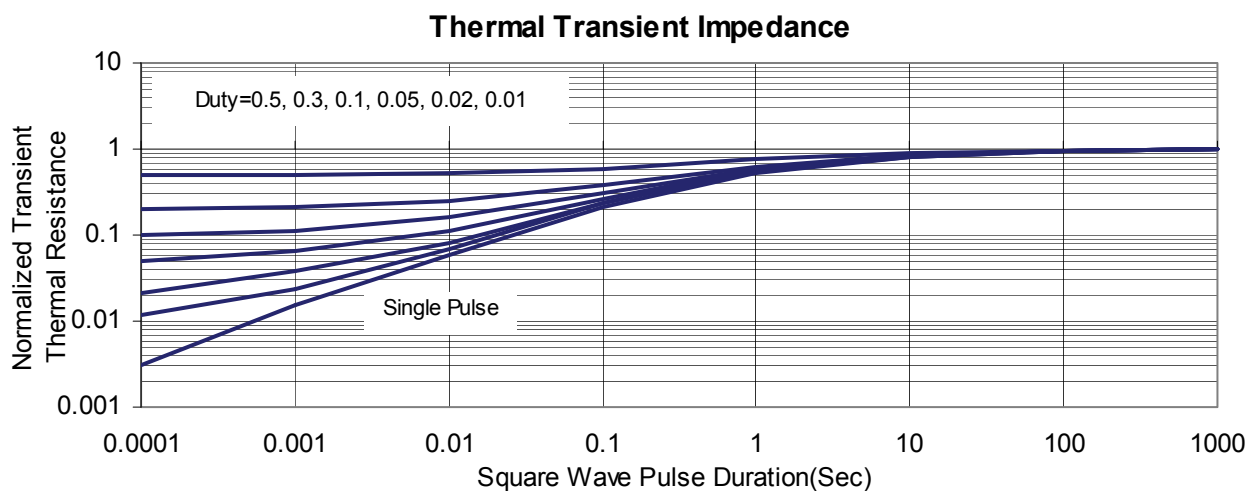
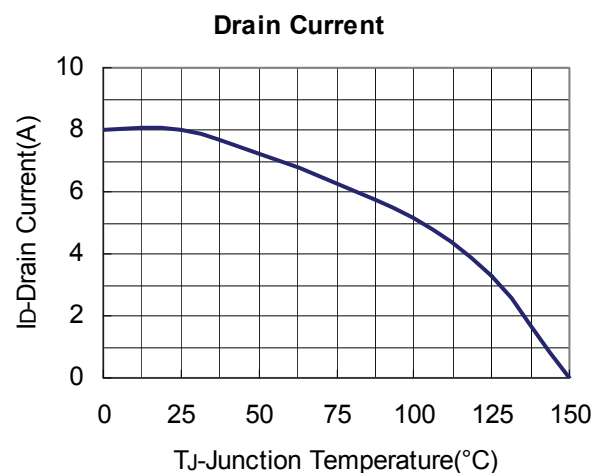
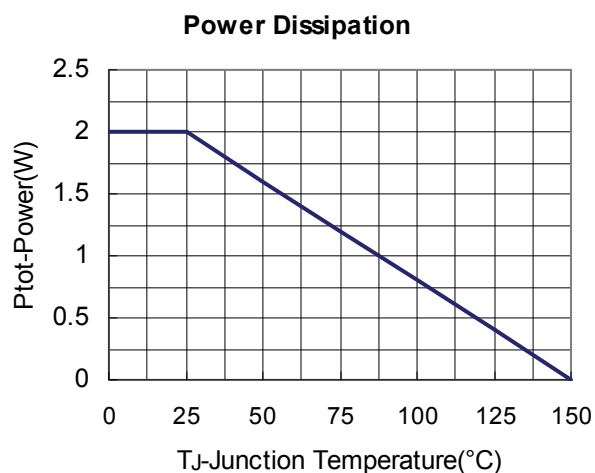
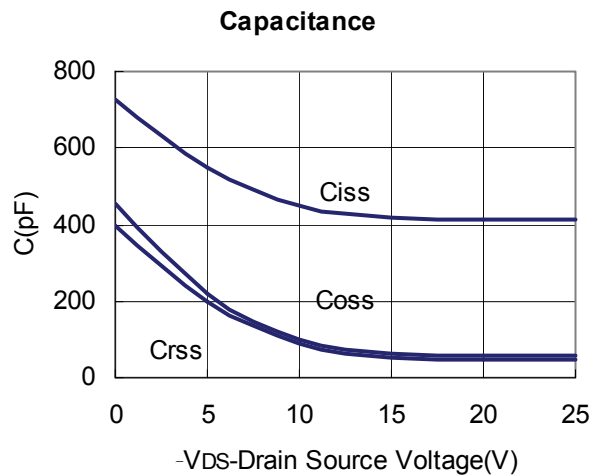
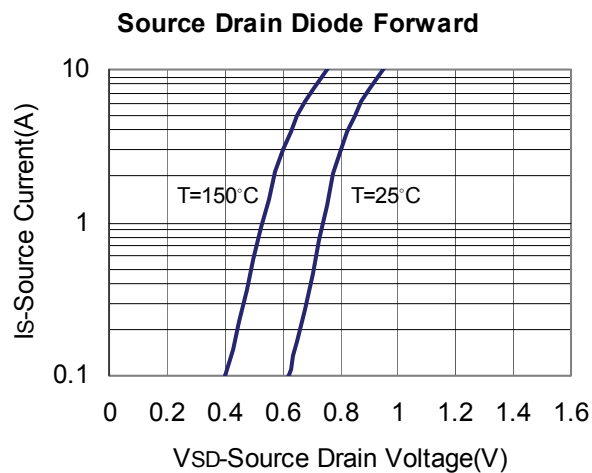
Gate Charge



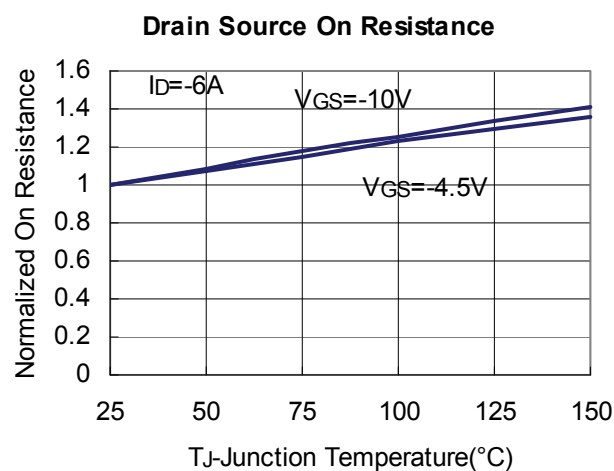
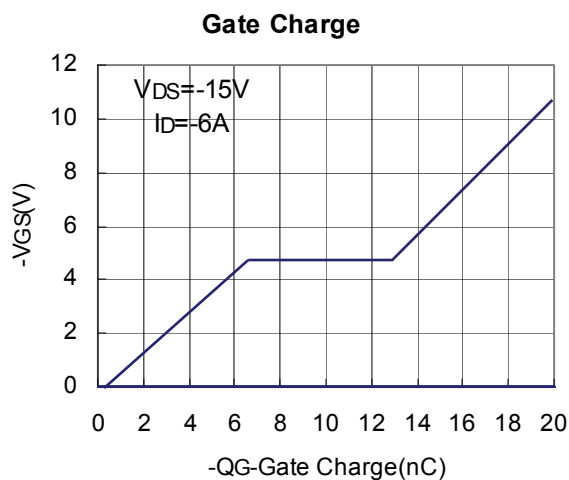
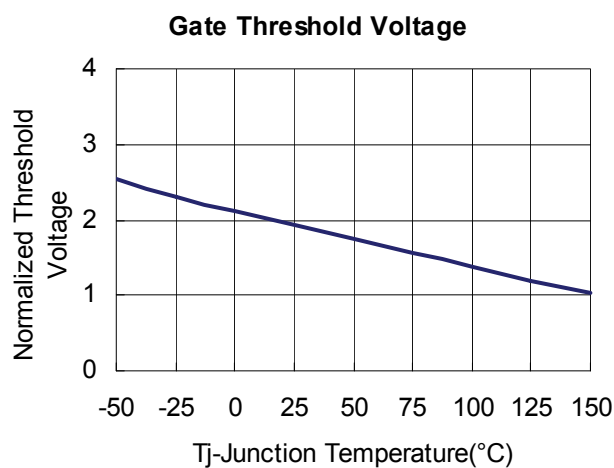
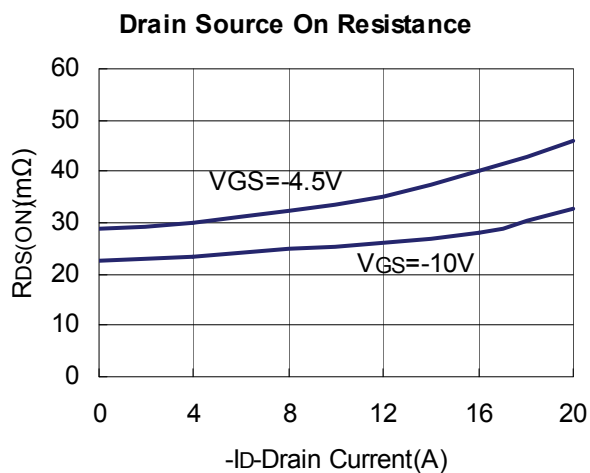
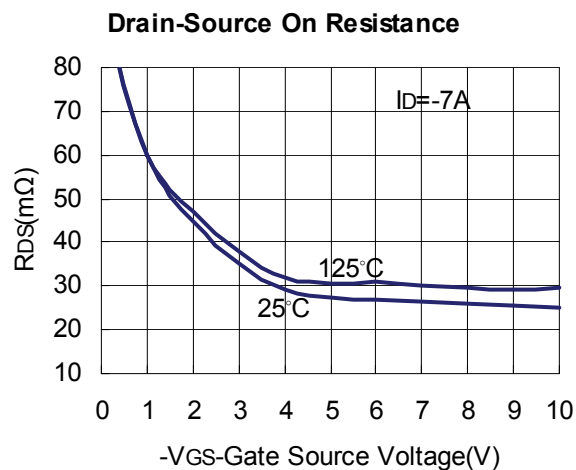
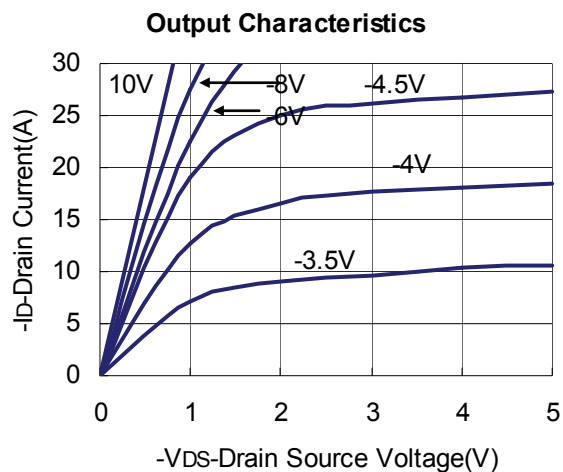
Drain Source On Resistance



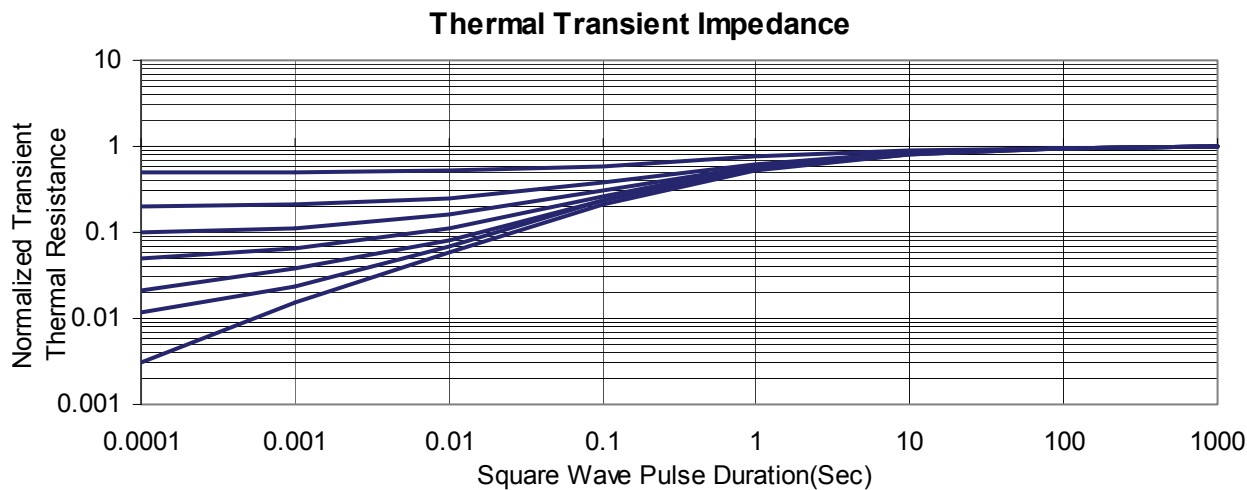
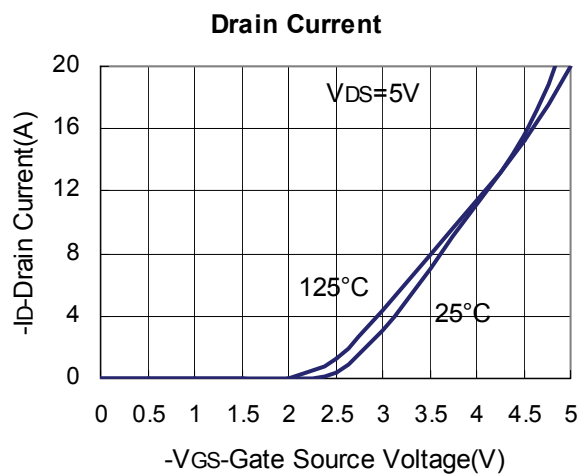
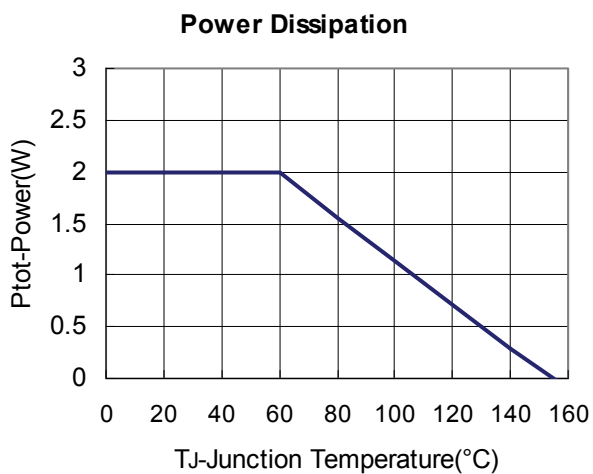
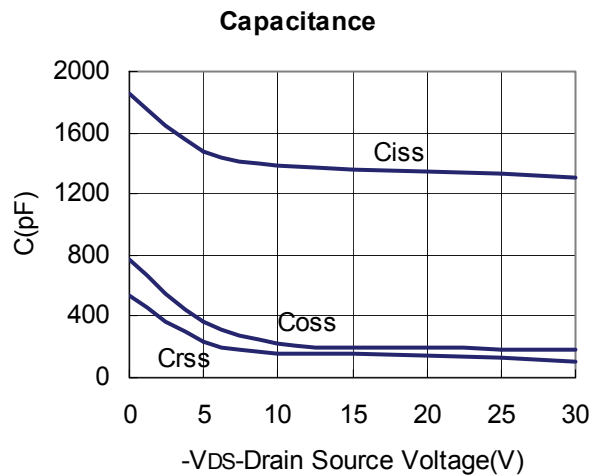
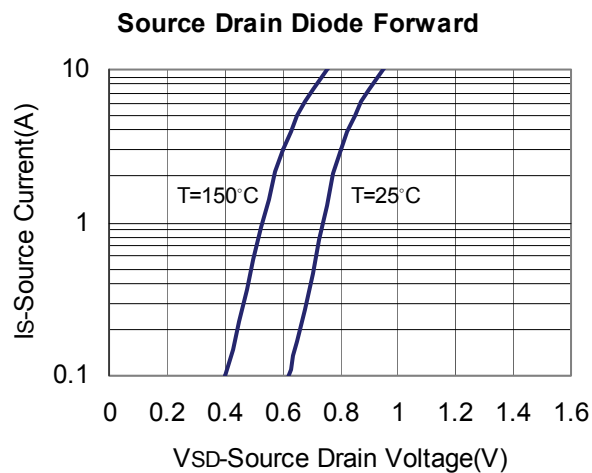
TYPICAL CHARACTERISTICS(N-Channel)



TYPICAL CHARACTERISTICS(P-Channel)



TYPICAL CHARACTERISTICS(P-Channel)



■ SOP-8 PACKAGE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.040	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

