GSM4600

100V N & P Pair Enhancement Mode MOSFET

Product Description

These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(ON)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry.

Typical applications are PWM DC-DC converters, power management in portable and battery powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

Features

N-Channel

- 100V, 9.8A, $R_{DS(ON)}$=155mΩ@V_{GS}=10V
- 100V, 9.8A, $R_{DS(ON)}$=175mΩ@V_{GS}=4.5V

P-Channel

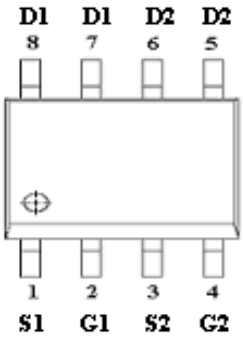
- -100V, -9A, $R_{DS(ON)}$=160mΩ@V_{GS}=-10V
- -100V, -9A, $R_{DS(ON)}$=185mΩ@V_{GS}=-4.5V
- Fast switching speed
- SOP-8 package design

Applications

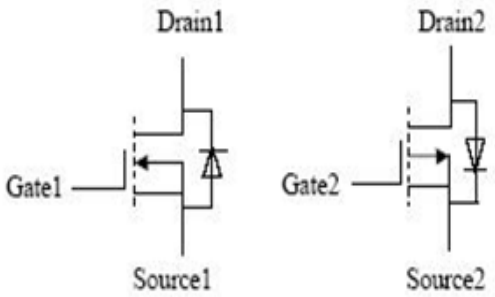
- Power Management in Note
- Portable Equipment
- Battery Powered System
- Load Switch
- LCD Display inverter

Packages & Pin Assignments

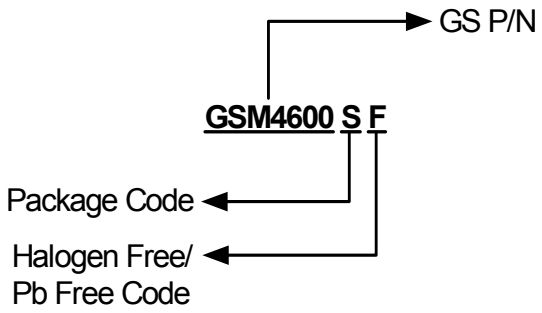
GSM4600SF(SOP-8)



Pin	Description	Pin	Description
1	Source1	5	Drain2
2	Gate1	6	Drain2
3	Source2	7	Drain1
4	Gate2	8	Drain1

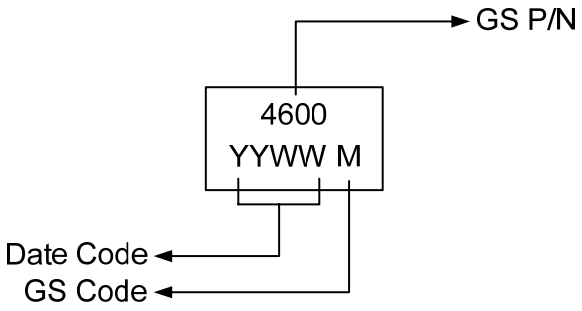


Ordering Information



Part Number	Package	Quantity Reel
GSM4600SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings (N-Channel)

(T_A=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current (*1)	T_A=25ºC	9.8	A
		T_A=70ºC	7	
I_{DM}	Pulsed Drain Current (*2)		37	A
P_D	Power Dissipation (*1)	T_A=25ºC	2.5	W
		T_A=70ºC	1.6	
T_J	Operating Junction Temperature Range		-55 to 150	ºC
T_{STG}	Storage Temperature Range		-55 to 150	ºC
T_L	Lead Temperature(1/16" from case for 10sec)		275	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		50	ºC/ W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		30	ºC/ W

Electrical Characteristics (N-Channel)

(T_C=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	3	4	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±250	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,V_{GS}=0V			1	uA
$I_{D(on)}$	On-State Drain Current (*3)	V_{DS}≧5V,V_{GS}=10V	20			A
$R_{DS(on)}$	Drain-Source On-Resistance (*3)	V_{GS}=10V,I_D=5.5A		125	155	mΩ
		V_{GS}=4.5V,I_D=4A		140	175	
g_{FS}	Forward Transconductance (*3)	V_{DS}=50V,I_D=5.5A		2		S
I_S	Continuous Current				9.6	A
I_{SM}	Pulsed Current (*5)				37	A
V_{SD}	Diode Forward Voltage (*3)	I_F=I_S,V_{GS}=0V			1.4	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V,f=1MHz		560		pF
C_{oss}	Output Capacitance			81		
C_{rss}	Reverse Transfer Capacitance			10		
Q_g	Total Gate Charge (*4)	V_{DS}=0.5$V_{(BR)DSS}$, V_{GS}=10V,I_D=9.6A		22		nC
Q_{gs}	Gate-Source Charge (*4)			5.2		
Q_{gd}	Gate-Drain Charge (*4)			7		
$t_{d(on)}$	Turn-On Time (*4)	V_{DD}=10V, I_D=1A,V_{GS}=10V, R_G=6Ω		2.2	4.4	ns
T_r				7.5	15	
$t_{d(off)}$	Turn-Off Time (*4)			11.8	21.3	
T_f				3.7	7.4	
Rg	Gate Resistance	V_{GS}=V_{DS}=0V,f=1MHz		1.7	3	Ω

Absolute Maximum Ratings (P-Channel)

(T_A=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current (*1)	T_A=25ºC	-9	A
		T_A=70ºC	-6	
I_{DM}	Pulsed Drain Current (*2)		-37	A
P_D	Power Dissipation (*1)	T_A=25ºC	2.5	W
		T_A=70ºC	1.6	
T_J	Operating Junction Temperature Range		-55 to 150	ºC
T_{STG}	Storage Temperature Range		-55 to 150	ºC
T_L	Lead Temperature(1/16" from case for 10sec)		275	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		50	ºC/ W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		30	ºC/ W

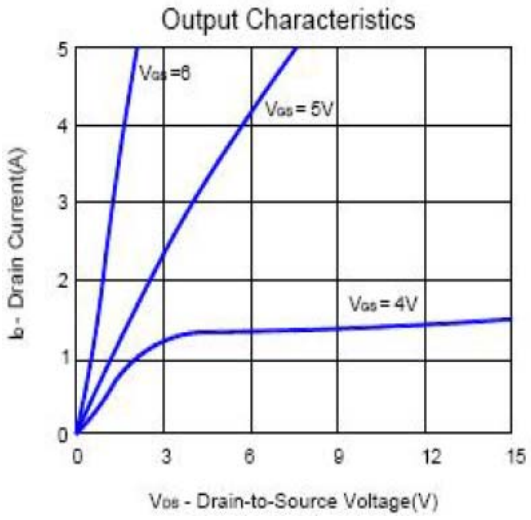
Electrical Characteristics (P-Channel)

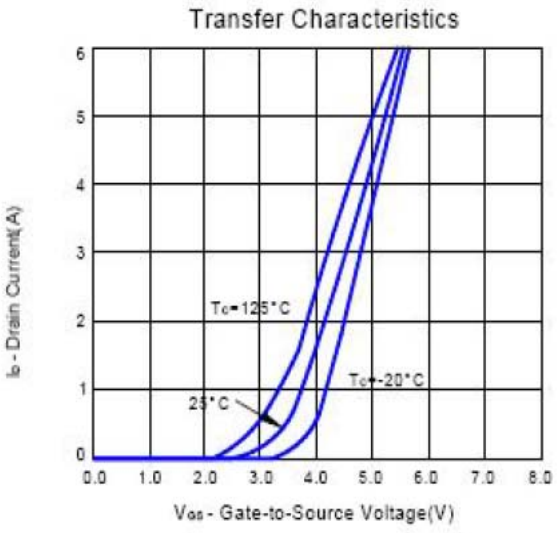
(T_C=25ºC unless otherwise noted)

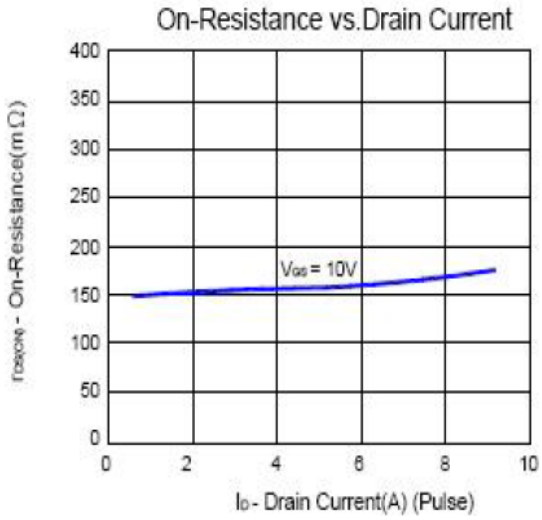
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-2	-3	-4	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±250	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-80V,V_{GS}=0V			-1	uA
$I_{D(on)}$	On-State Drain Current (*3)	V_{DS}≦-5V,V_{GS}=-10V	-20			A
$R_{DS(on)}$	Drain-Source On-Resistance (*3)	V_{GS}=-10V,I_D=-5.5A		130	160	mΩ
		V_{GS}=-4.5V,I_D=-4A		145	185	
g_{FS}	Forward Transconductance (*3)	V_{DS}=-50V,I_D=-5.5A		1.6		S
I_S	Continuous Current				-9.6	A
I_{SM}	Pulsed Current (*5)				-37	A
V_{SD}	Diode Forward Voltage (*3)	I_F=I_S,V_{GS}=0V			-1.4	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V,f=1MHz		1200		pF
C_{oss}	Output Capacitance			100		
C_{rss}	Reverse Transfer Capacitance			65		
Q_g	Total Gate Charge (*4)	V_{DS}=-0.5$V_{(BR)DSS}$, V_{GS}=-10V,I_D=-5.5A		43		nC
Q_{gs}	Gate-Source Charge (*4)			8		
Q_{gd}	Gate-Drain Charge (*4)			16		
$t_{d(on)}$	Turn-On Time (*4)	V_{DD}=-10V, I_D=-1A,V_{GS}=-10V, R_G=6Ω		6.7	13.4	ns
T_r				9.7	19.4	
$t_{d(off)}$	Turn-Off Time (*4)			19.8	35.6	
T_f				12.3	22.2	
Rg	Gate Resistance	V_{GS}=V_{DS}=0V,f=1MHz		3	5	Ω

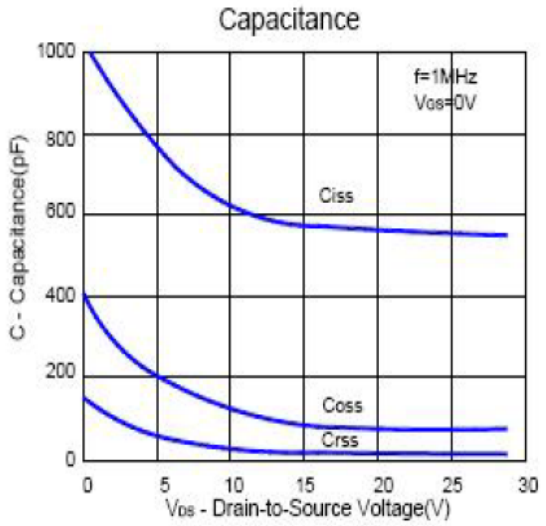
Note 1: Pulse width limited by maximum junction temperature.
Note 2: Duty cycle≦1%.
Note 3: Pulse test: PW≦300usec, duty cycle≦2%.
Note 4: Independent of operating temperature.
Note 5: Pulse width Limited by maximum junction temperature.

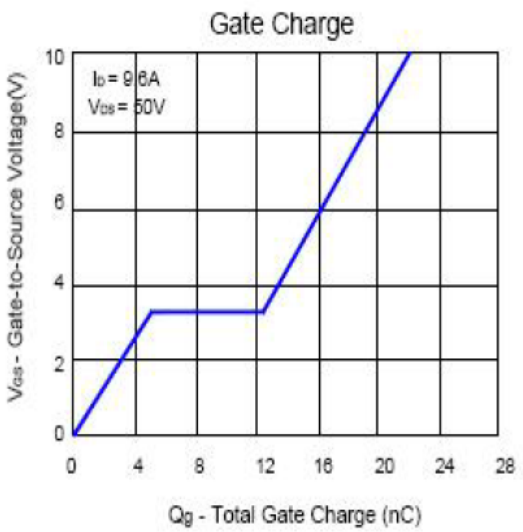
Typical Performance Characteristics (N-Channel)

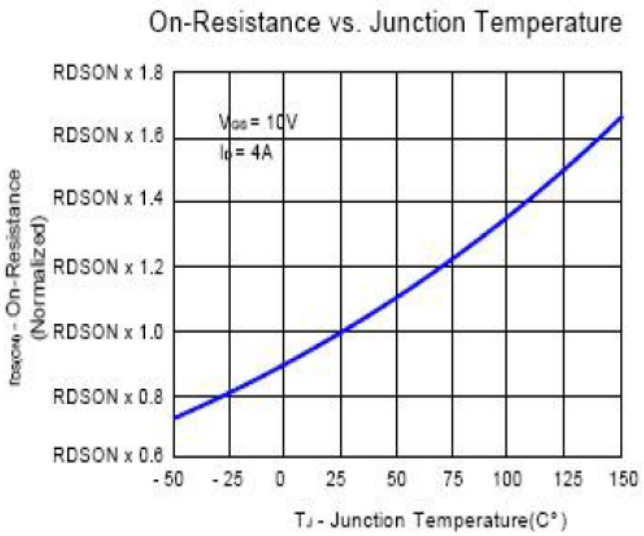




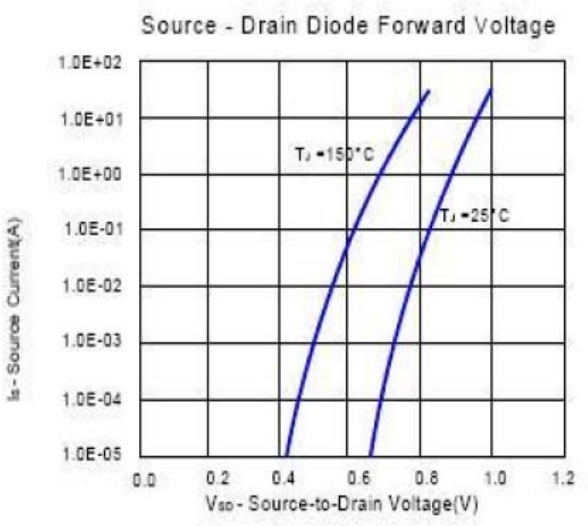


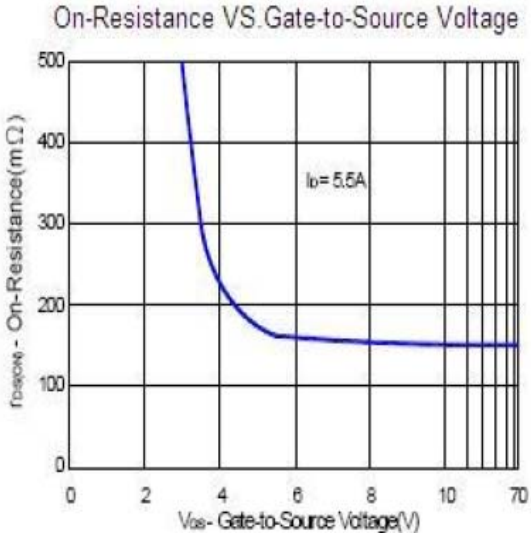


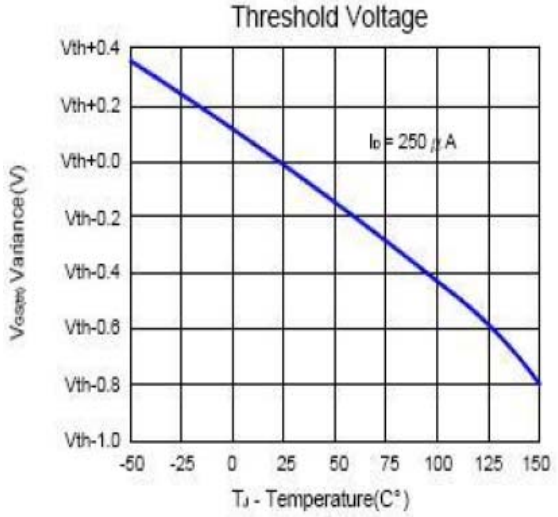


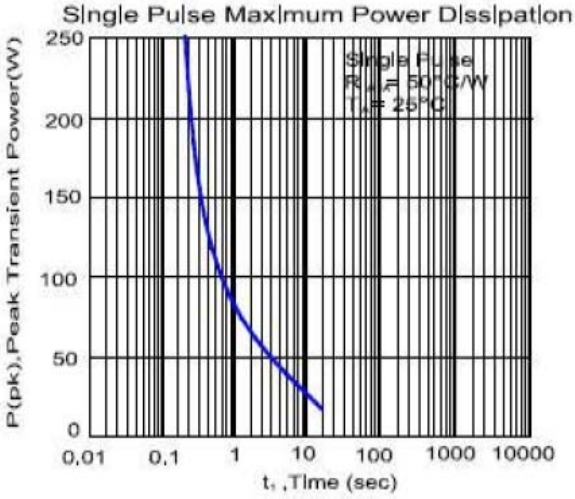


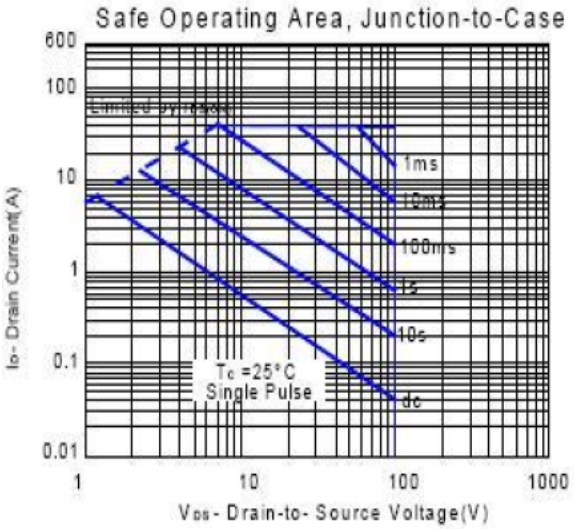
Typical Performance Characteristics (N-Channel)



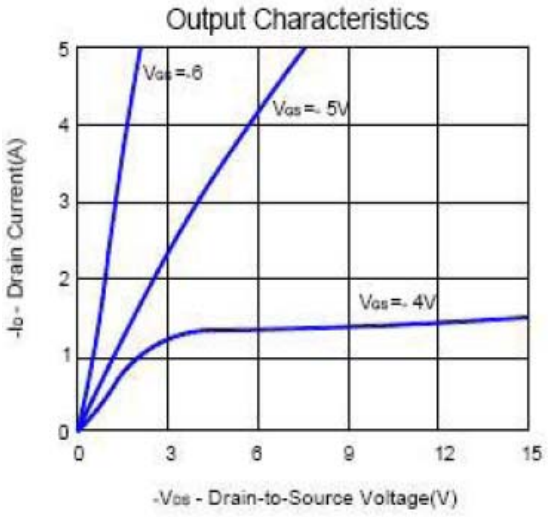


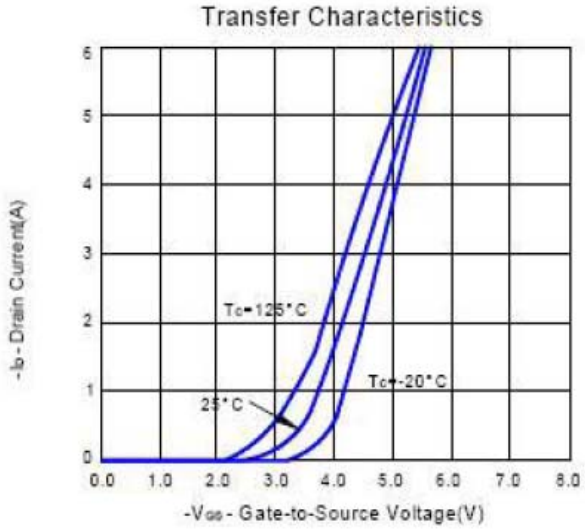


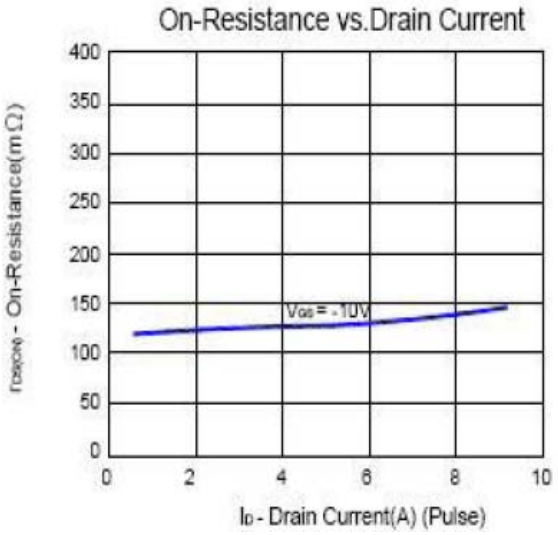


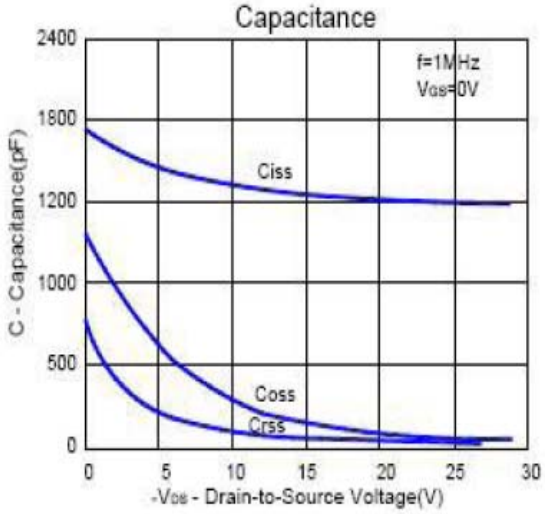


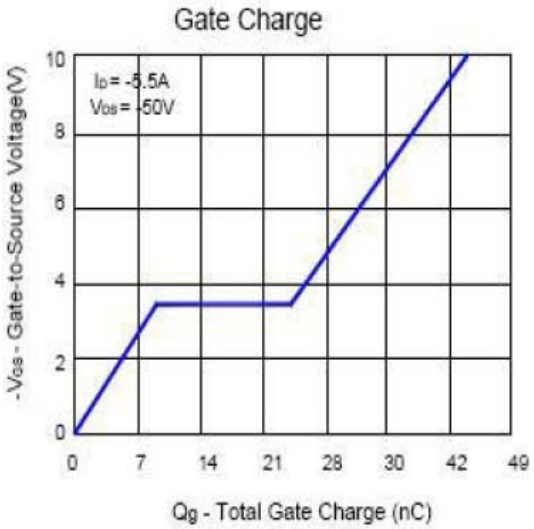
Typical Performance Characteristics (P-Channel)

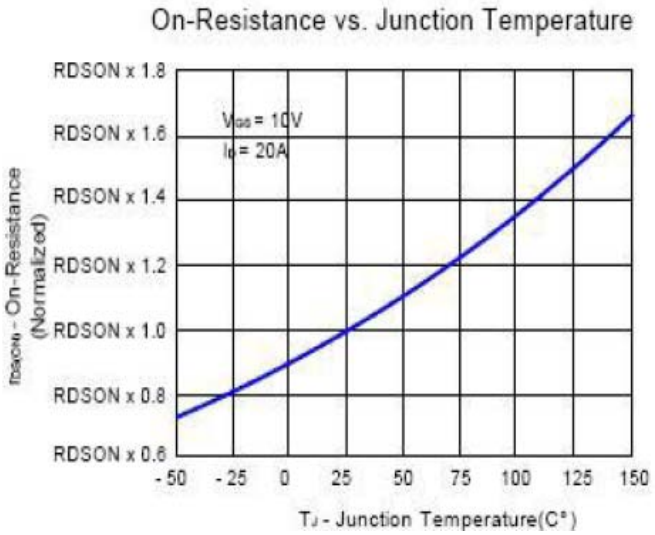




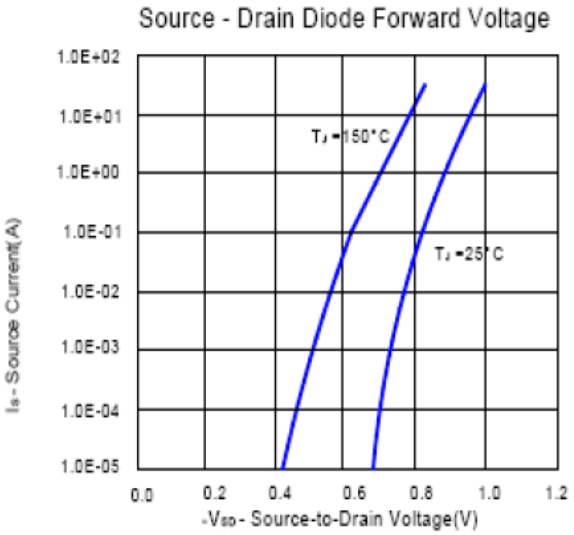


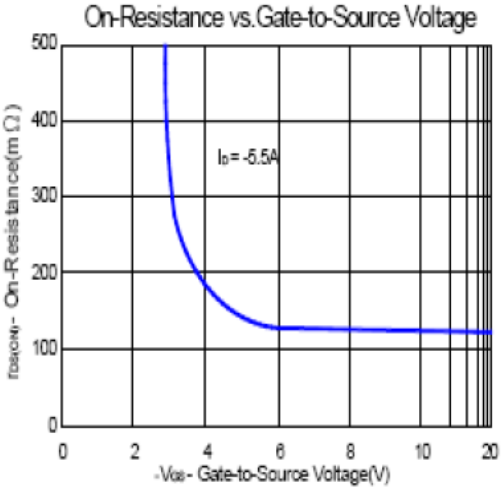


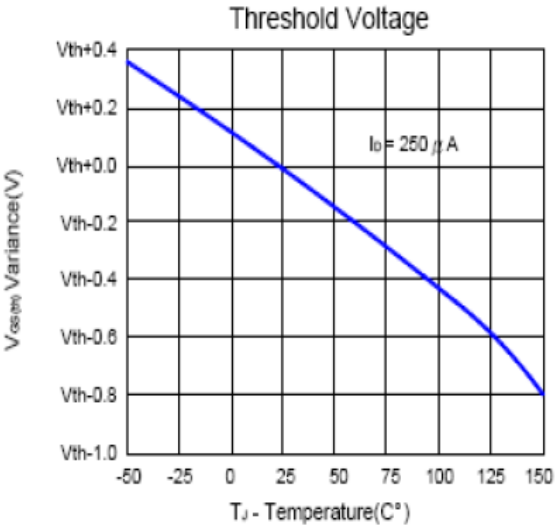


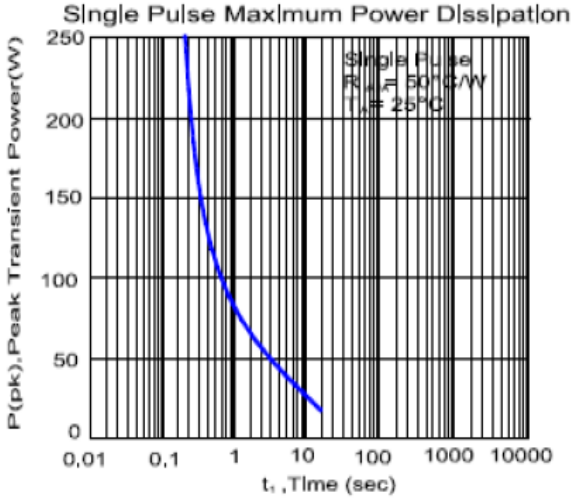


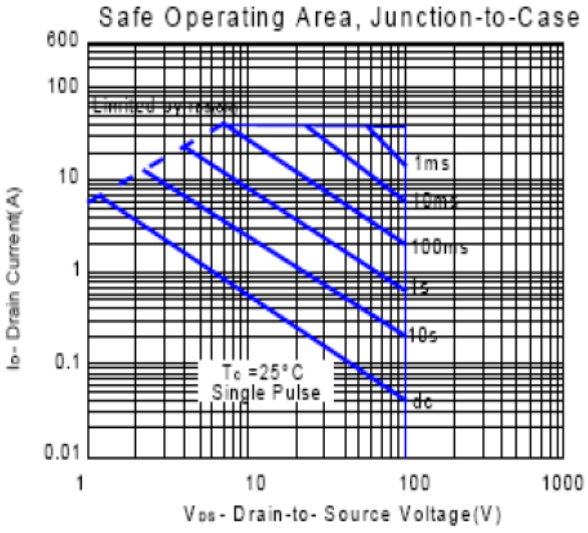
Typical Performance Characteristics (P-Channel)

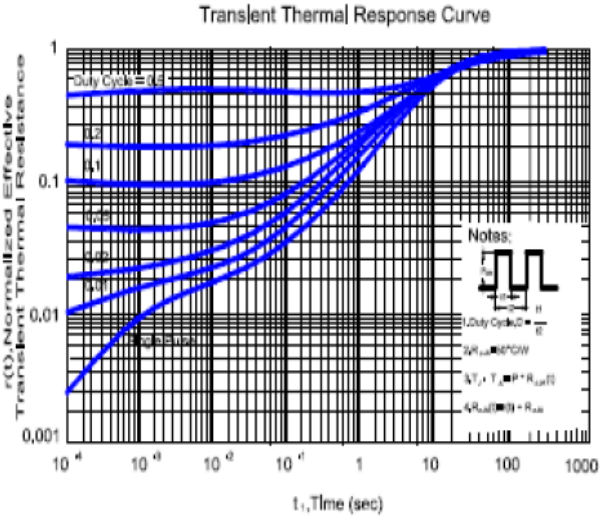






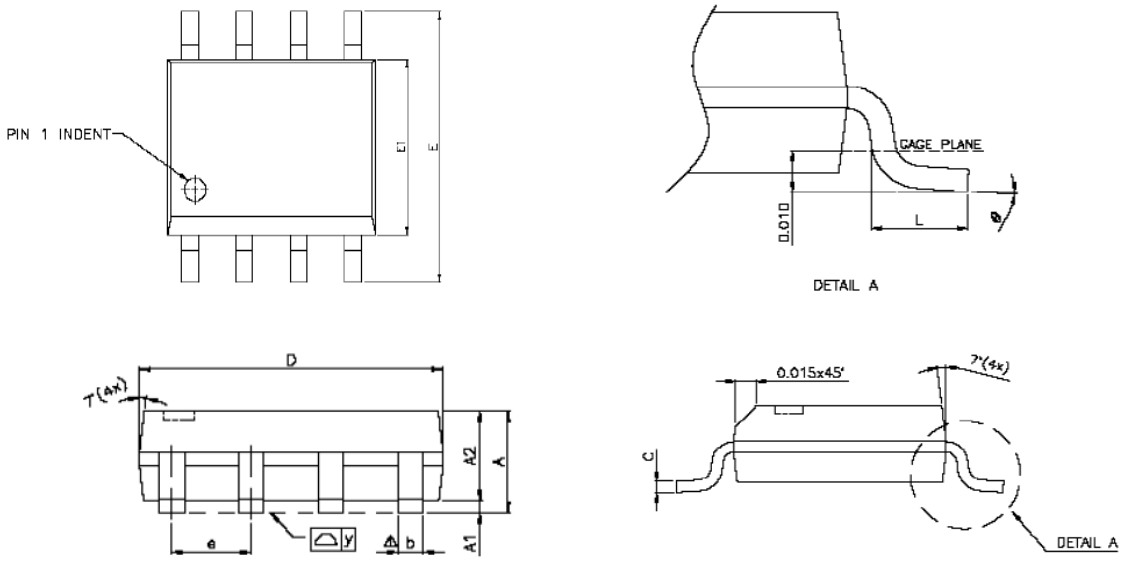






Package Dimension

SOP-8



Dimensions						
SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	-	0.25	0.004	-	0.010
A2	-	1.45	-	-	0.057	-
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	-	1.27	-	-	0.050	-
L	0.38	0.71	1.27	0.015	0.028	0.050
②y	-	-	0.076	-	-	0.003
θ	0°	-	8°	0°	-	8°

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