

FEATURES

- High Density Cell Design For Low $R_{DS(On)}$
- Voltsge Controlled Small Signal Switch
- Rugged and Reliable
- High Saturation Current Capability
- ESD Protected

APPLICATION

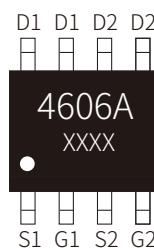
- Direct logic-level interface: TTL/CMOS
- Drivers: relays, solenoids, lamps
- hammers,display, memories, etc.
- Battery operated systems
- Solid-state relays

APPROVALS

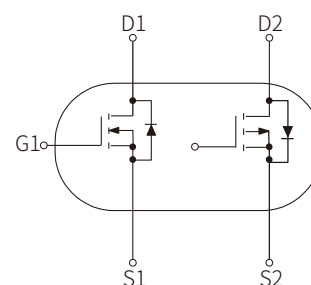
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



SOP-8L



Marking



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Value		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DS}	≤ 30	≤ -30	V
Drain Current (Notes1)	$I_D (V_{GS} = -10 \text{ V})$	≤ 7	≤ -6	A
	$I_D (T_a=100^{\circ}\text{C}, V_{GS} = -10 \text{ V})$	≤ 4.7	≤ -4	A
Pulsed Drain Current (Notes1) (Notes2)	$I_{DM} (V_{GS} = -10 \text{ V})$	≤ 36.4	≤ -25	A
Gate-Source Voltage	V_{GS}	$\leq \pm 20$		V
Total Power Dissipation	P_{tot}	≤ 2		W
Junction and Storage Temperature	T_J, T_{STG}	-55 to 150		$^{\circ}\text{C}$
Thermal Resistance- Junction to Ambient (Notes1)	$R_{\theta JA}$	≤ 62.5		$^{\circ}\text{C/W}$

Notes: (1)Surface Mounted on 1 in² pad area, $t \leq 10$ sec
 (2)Pulse width $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$)

N-channel:						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Drain Leakage Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1	μA
		$V_{DS}=24V, V_{GS}=0V, T_J=85^{\circ}C$			30	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.0		2.0	V
On-State Resistance ^(Notes1)	$R_{DS(on)}$	$V_{GS}=10V, I_D=6A$		18	25	mΩ
		$V_{GS}=4.5V, I_D=5A$		25	31	
Diode Characteristics						
Diode Forward Voltage ^(Notes1)	V_{SD}	$V_{GS}=0V, I_{SD}=9A$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD}=9A, dI_{SD}/dt=100A/\mu s$		42		ns
Reverse Recovery Charge	Q_{rr}	$I_{SD}=9A, dI_{SD}/dt=100A/\mu s$		7.3		nC
Dynamic Characteristics ^(Notes2)						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ Frequency=1.0MHz		579		pF
Output Capacitance	C_{oss}			64		
Reverse Transfer Capacitance	C_{rss}			50		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=1.6\Omega$ $V_{GEN}=10V, R_G=4.5\Omega, I_D=9A$		7.2		ns
Turn-On Rise Time	t_r			30		
Turn-Off Delay Time	$t_{d(off)}$			19		
Turn-Off Fall Time	t_f			18		
Gate Charge Characteristics ^(Notes2)						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=15V, I_{DS}=9A$		22		nC
Gate Source Charge	Q_{gs}			5		
Gate Drain Charge	Q_{gd}			3.3		

Notes: (1)Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

(2)Guaranteed by design, not subject to production testing

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$)

P-channel:						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
Drain Leakage Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1.0	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.0		-2.0	V
On-State Resistance ^(Notes1)	$R_{DS(on)}$	$V_{GS}=-10V, I_{DS}=-4.1A$		36	60	m Ω
		$V_{GS}=-4.5V, I_{DS}=-3.5A$		50	85	
Diode Characteristics						
Diode Forward Voltage ^(Notes1)	V_{SD}	$V_{GS}=0V, I_{SD}=-6A$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-6A, dI_{SD}/dt=100 A/\mu s$		9.8		ns
Reverse Recovery Charge	Q_{rr}	$I_{SD}=-6A, dI_{SD}/dt=100 A/\mu s$		1.0		nC
Dynamic Characteristics ^(Notes2)						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ Frequency=1.0MHz		645		pF
Output Capacitance	C_{oss}			272		
Reverse Transfer Capacitance	C_{rss}			103		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, R_L=2.5\Omega$ $V_{GEN}=-10V, R_G=4.5\Omega, I_{DS}=-6A$		14		ns
Turn-On Rise Time	t_r			42		
Turn-Off Delay Time	$t_{d(off)}$			141		
Turn-Off Fall Time	t_f			75		
Gate Charge Characteristics ^(Notes2)						
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-15V, I_{DS}=-6A$		22		nC
Gate Source Charge	Q_{gs}			5.8		
Gate Drain Charge	Q_{gd}			3.3		

Notes: (1) : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
 (2) : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

N-channel:

Figure 1: Power Capability

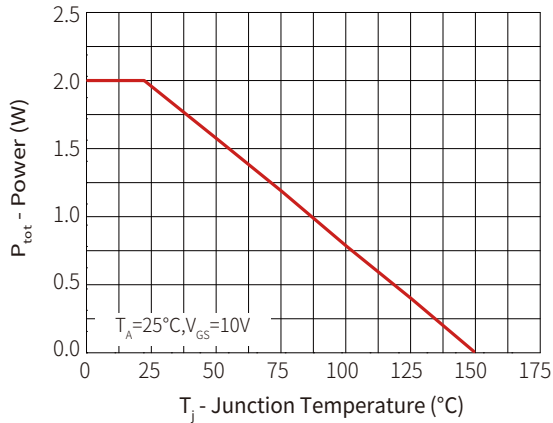


Figure 2: Current Capability

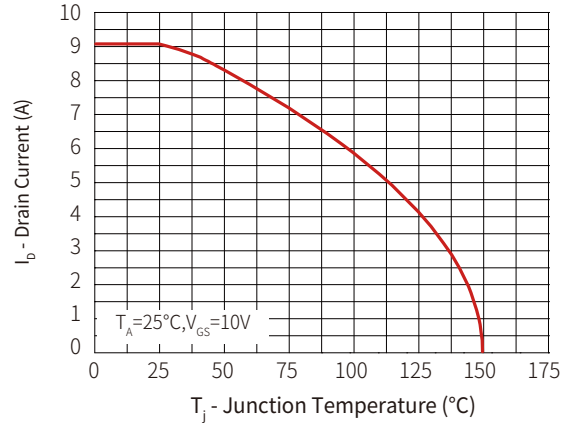


Figure 3: Safe Operation Area

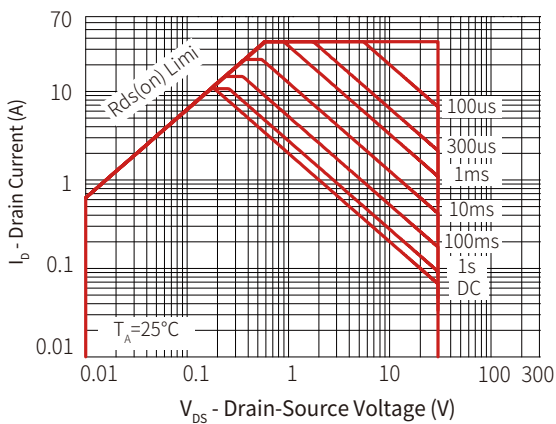


Figure 4: Transient Thermal Impedance

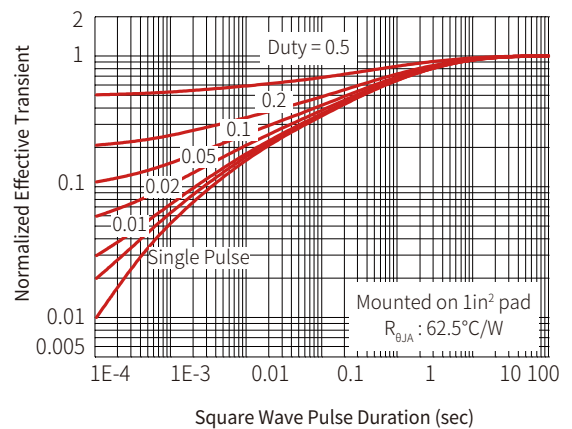


Figure 5: Output Characteristics

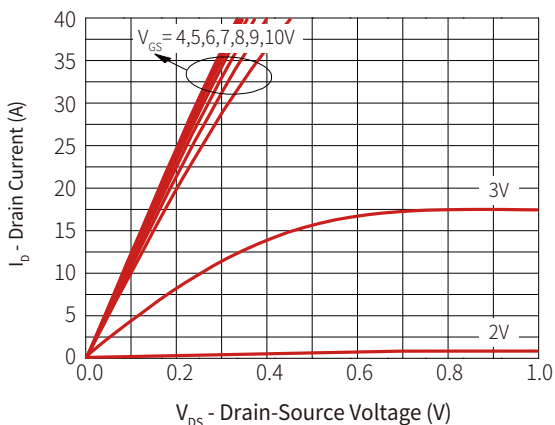


Figure 6: On Resistance

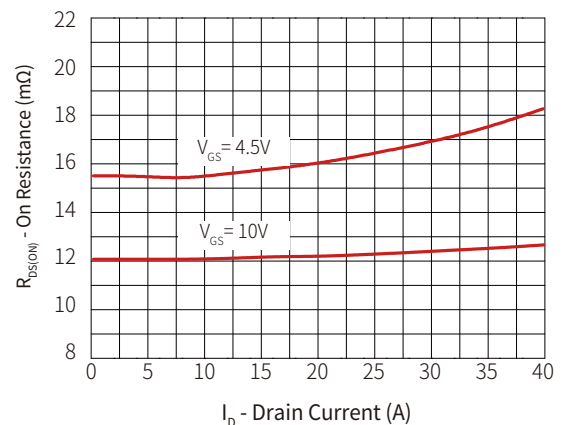
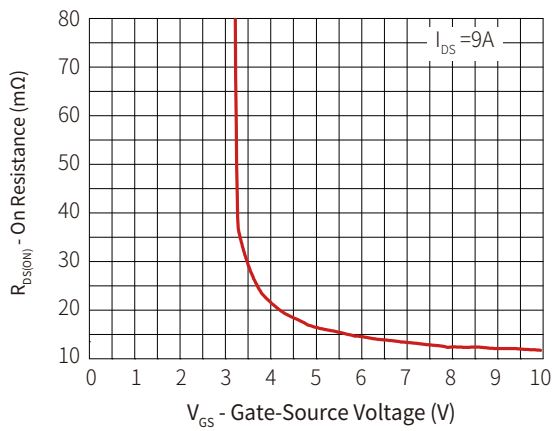
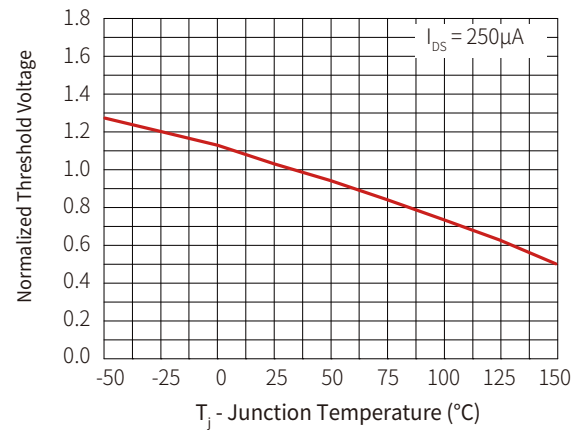
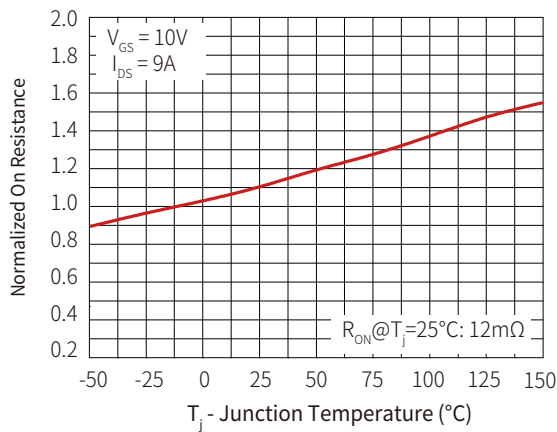
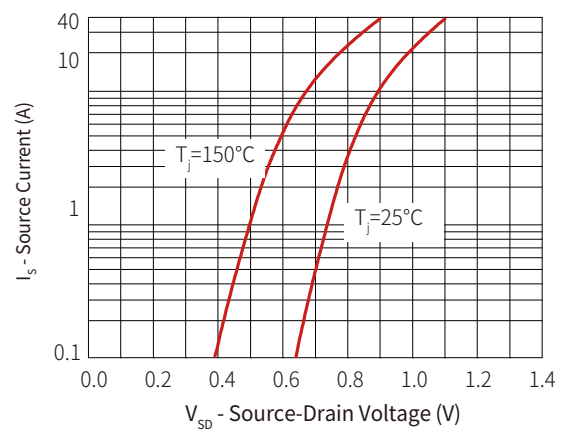
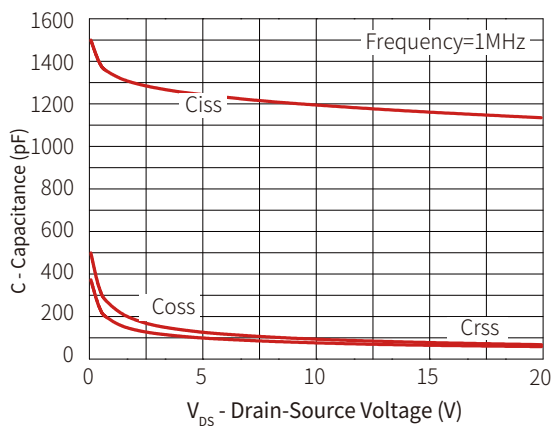
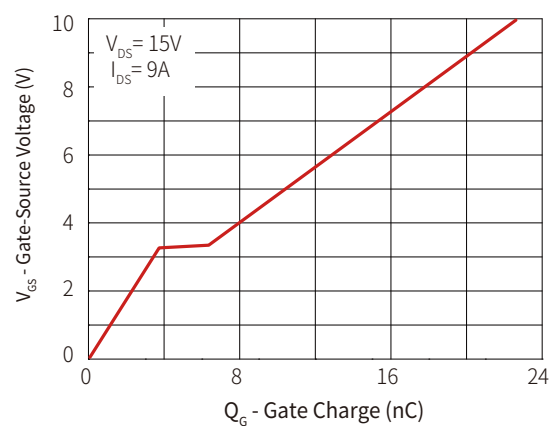


Figure 7: Transfer Characteristics

Figure 8: Normalized Threshold Voltage

Figure 9: Normalized On Resistance

Figure 10: Diode Forward Current

Figure 11: Capacitance

Figure 12: Gate Charge


PARAMETER CHARACTERISTIC CURVE

P-channel:

Figure 1: Power Capability

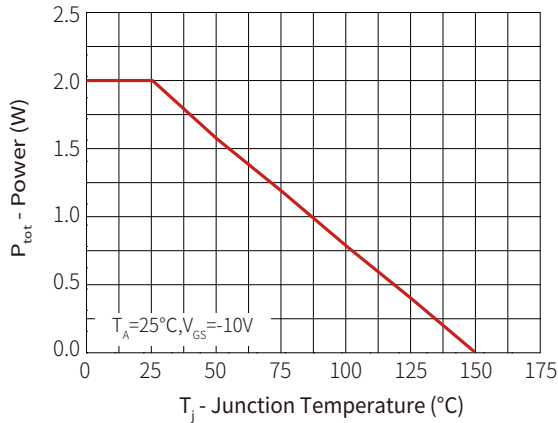


Figure 2: Current Capability

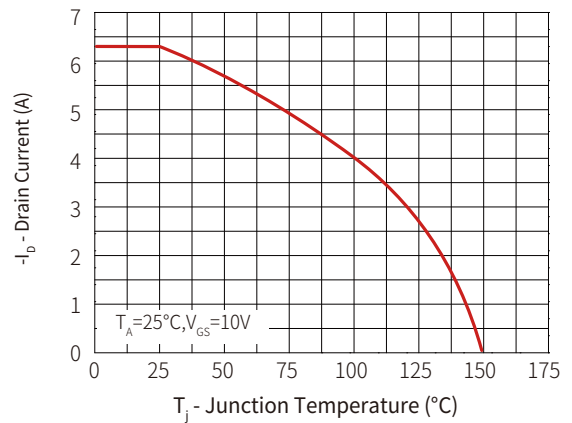


Figure 3: Safe Operation Area

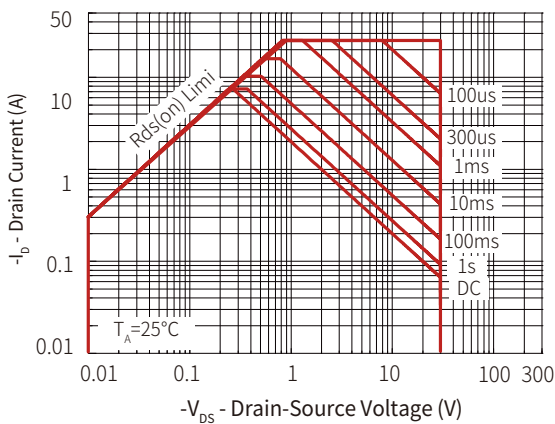


Figure 4: Transient Thermal Impedance

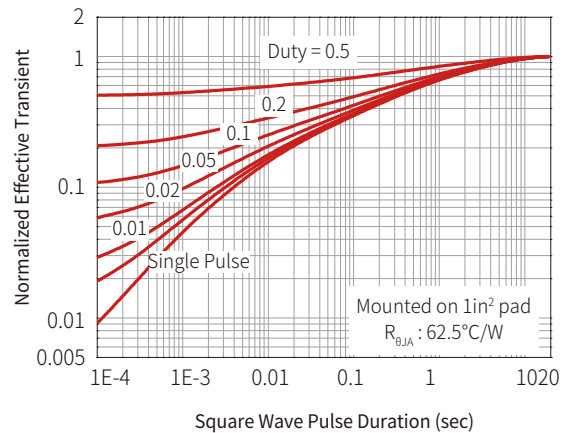


Figure 5: Output Characteristics

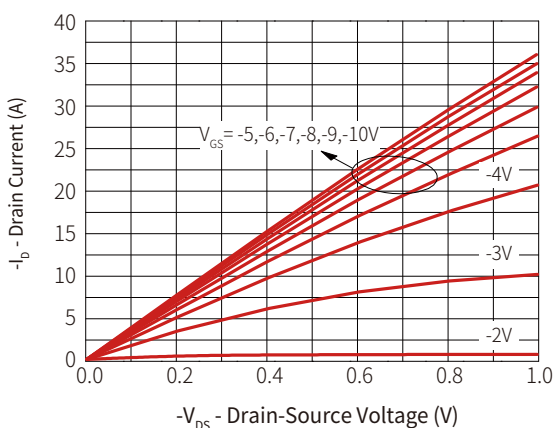
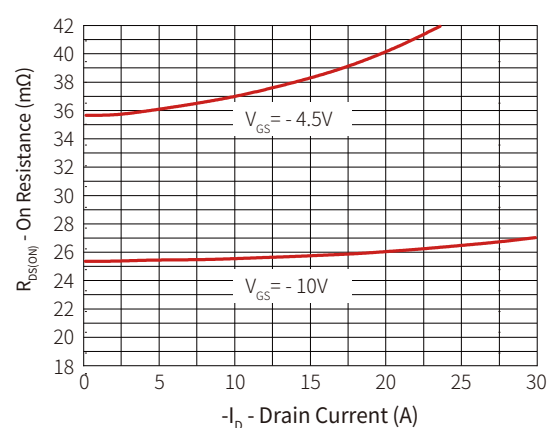
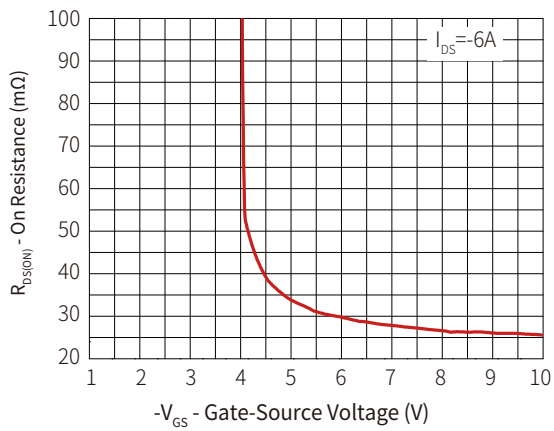
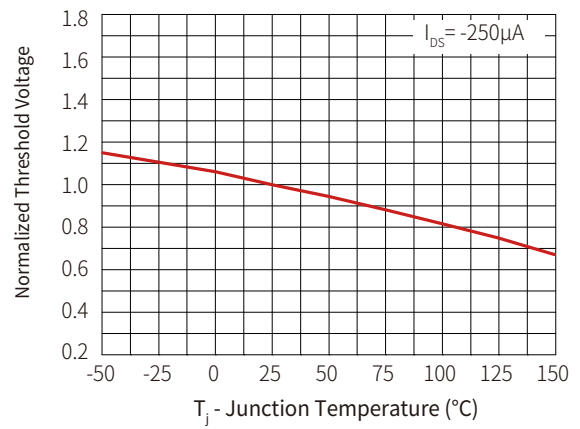
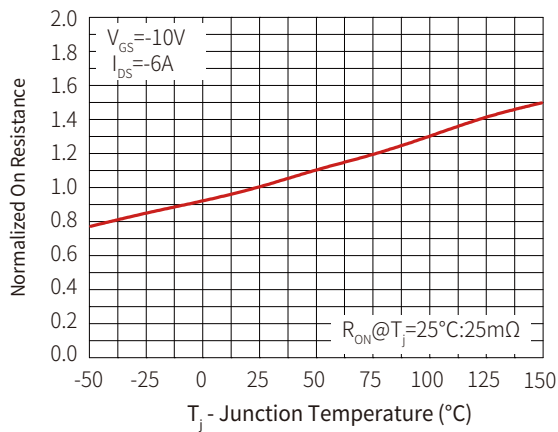
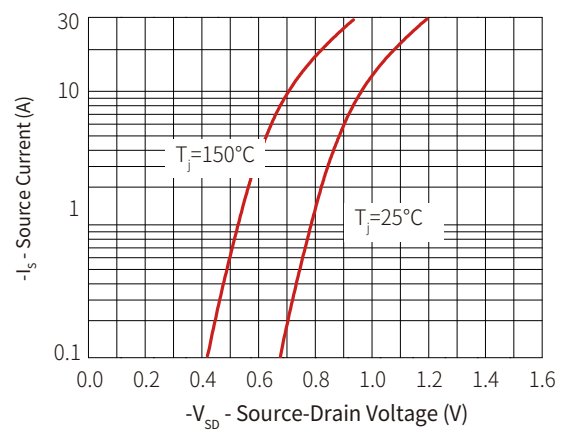
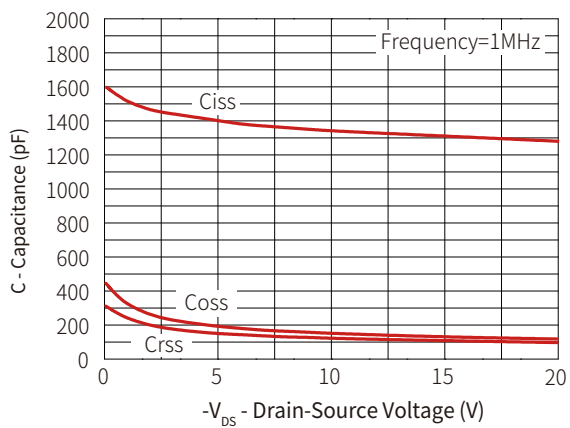
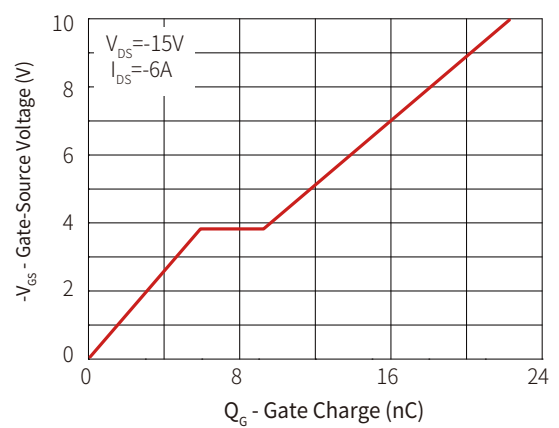
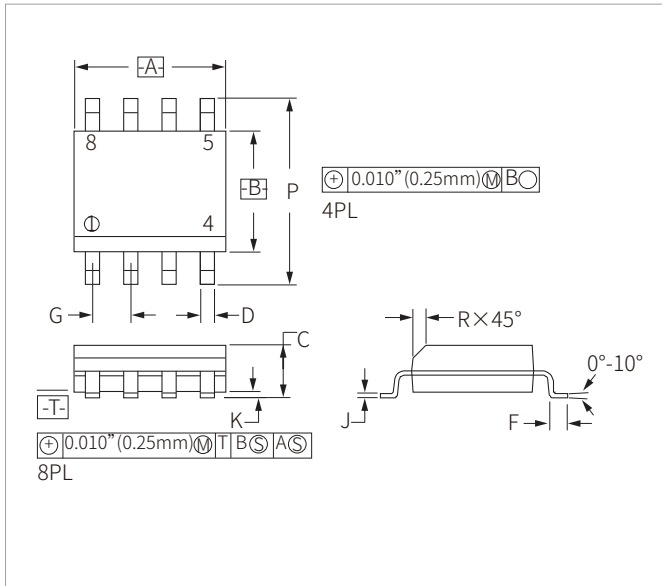


Figure 6: On Resistance



**Figure 7: Transfer Characteristics****Figure 8: Normalized Threshold Voltage****Figure 9: Normalized On Resistance****Figure 10: Diode Forward Current****Figure 11: Capacitance****Figure 12: Gate Charge**

SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
B	3.80	4.20	0.150	0.165
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.050BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNPM4606	SOP-8L	3000PCS	13"

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By QR Code

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