

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

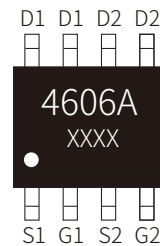
- | Direct logic-level interface: TTL/CMOS
- | Drivers: relays, solenoids, lamps
- | hammers, display, memories, etc.
- | Battery operated systems
- | Solid-state relays

APPROVALS

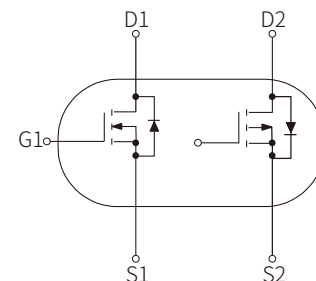
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



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		$^{\circ}\text{C}/\text{W}$

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°C)

N-channel:						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Drain Leakage Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =85°C			30	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	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} =9 A, dI _{SD} /dt=100 A/μs		42		ns
Reverse Recovery Charge	Q _{rr}	I _{SD} =9A, dI _{SD} /dt=100 A/μs		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 =1.6Ω V _{GEN} =10V, R _G =4.5Ω, I _D =9 A		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 ≤ 300μs, duty cycle ≤ 2%

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

ELECTRICAL CHARACTERISTICS(T_a = 25°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

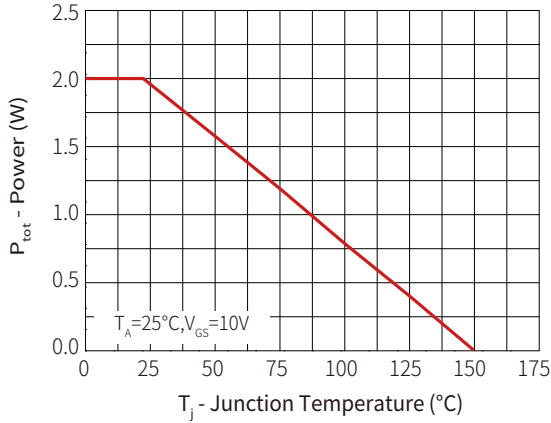


Figure 2: Current Capability

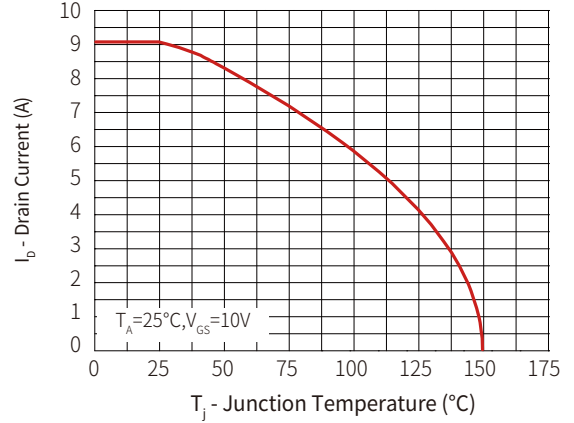


Figure 3: Safe Operation Area

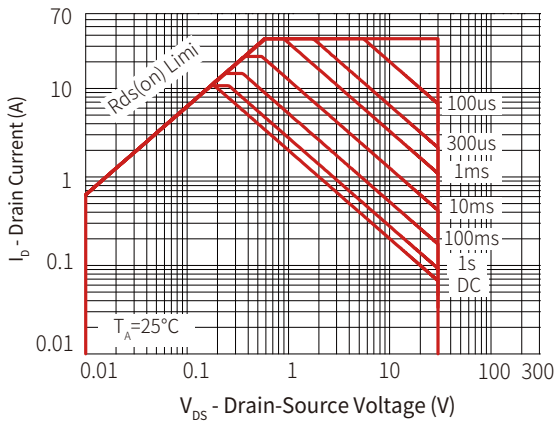


Figure 4: Transient Thermal Impedance

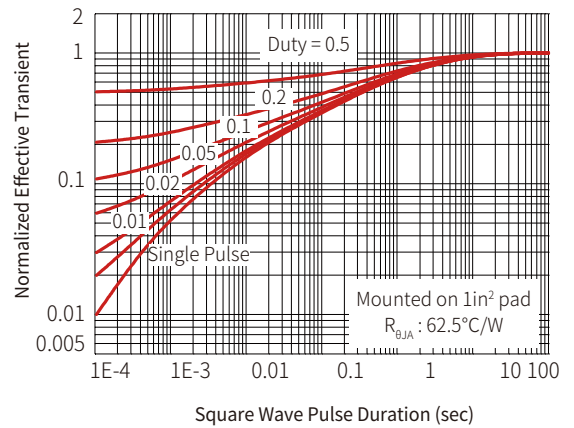


Figure 5: Output Characteristics

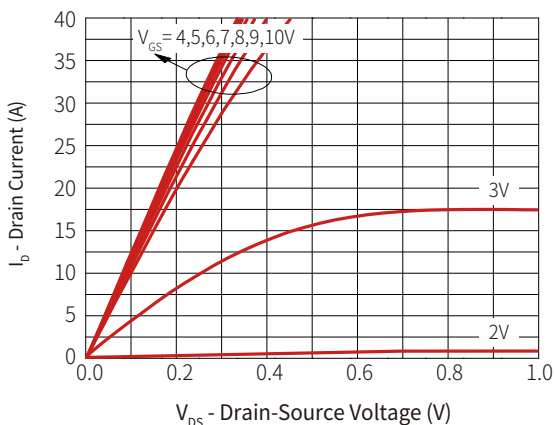


Figure 6: On Resistance

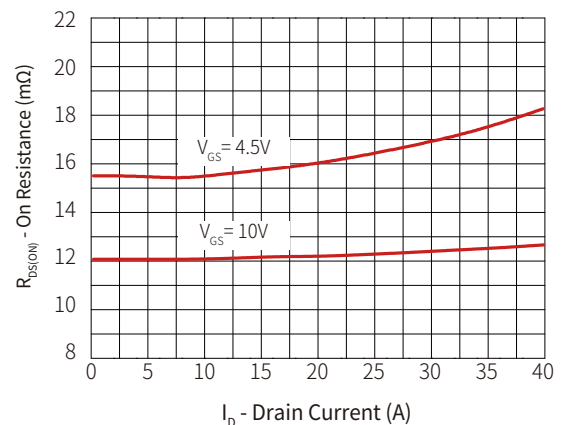


Figure 7: Transfer Characteristics

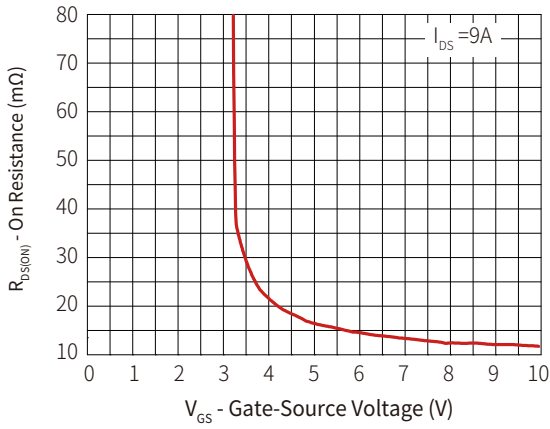


Figure 8: Normalized Threshold Voltage

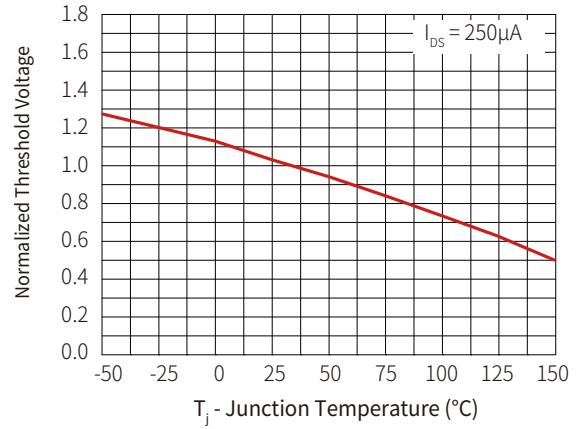


Figure 9: Normalized On Resistance

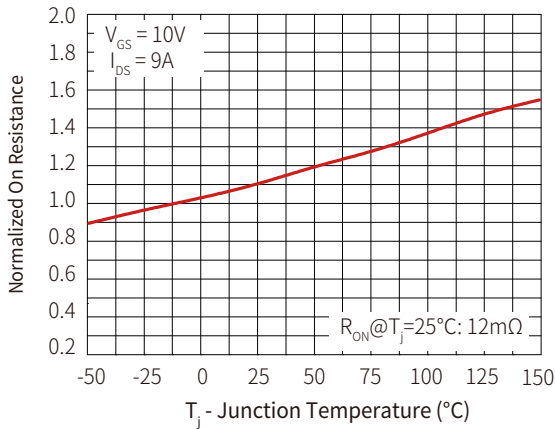


Figure 10: Diode Forward Current

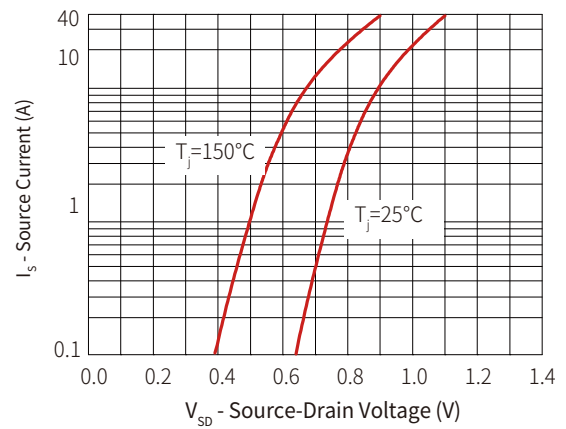


Figure 11: Capacitance

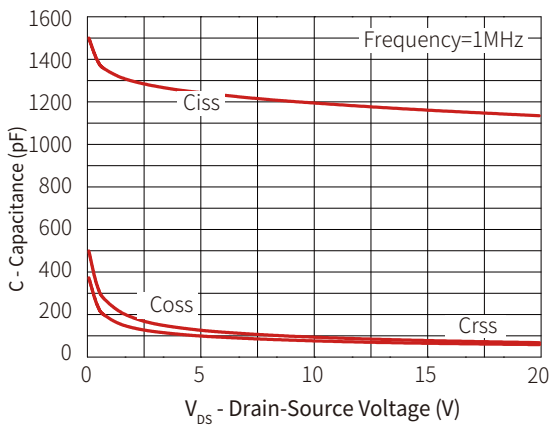
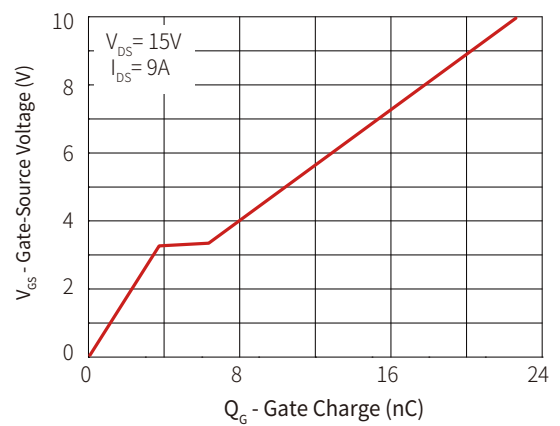


Figure 12: Gate Charge



PARAMETER CHARACTERISTIC CURVE

P-channel:

Figure 1: Power Capability

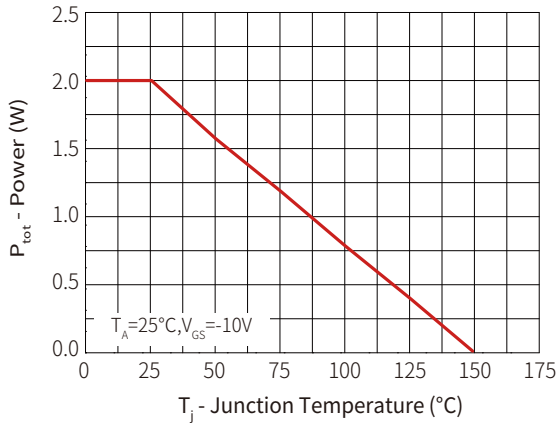


Figure 2: Current Capability

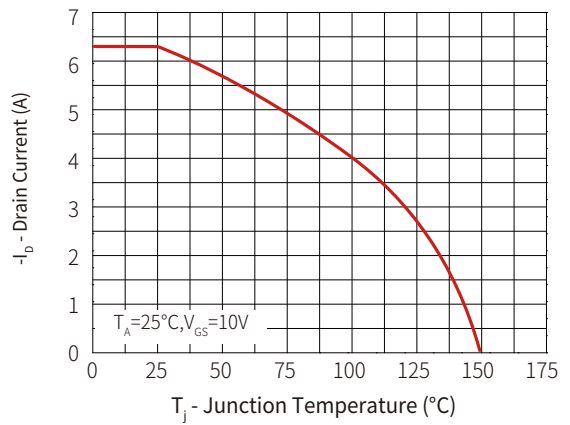


Figure 3: Safe Operation Area

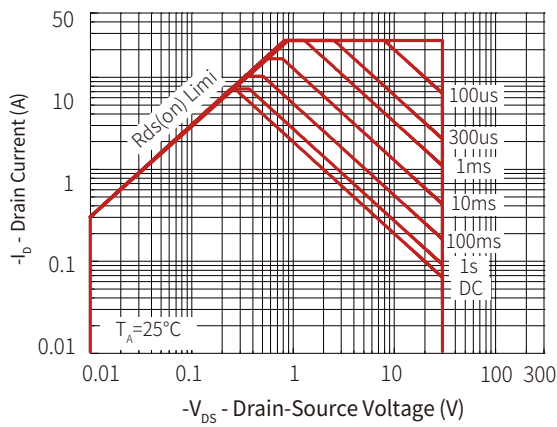


Figure 4: Transient Thermal Impedance

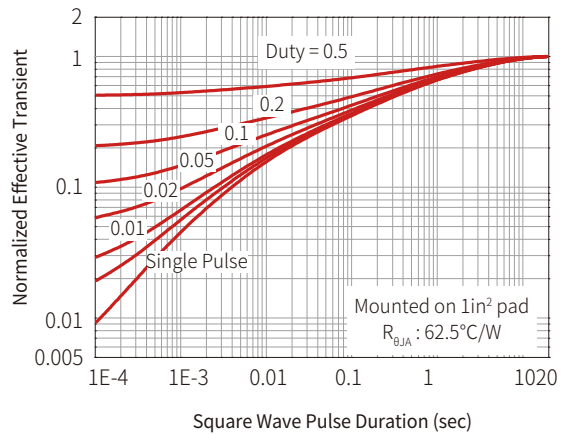


Figure 5: Output Characteristics

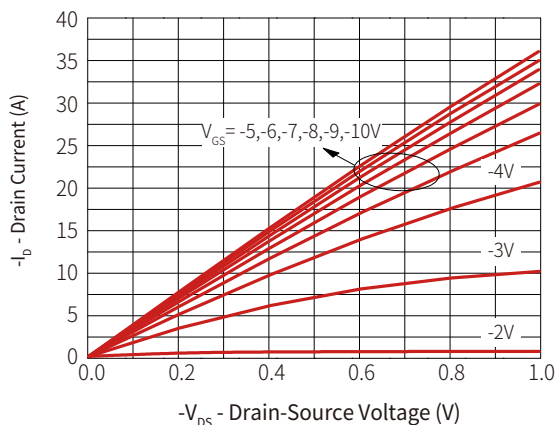


Figure 6: On Resistance

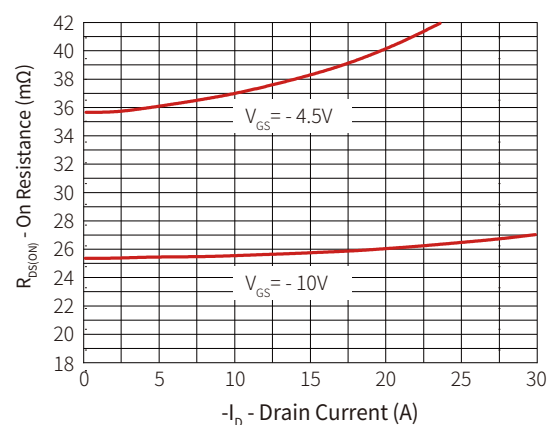


Figure 7: Transfer Characteristics

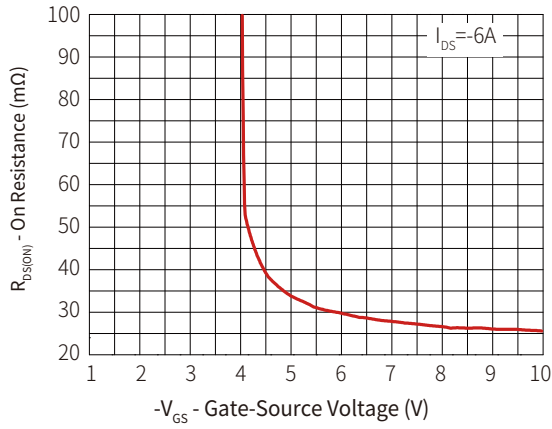


Figure 8: Normalized Threshold Voltage

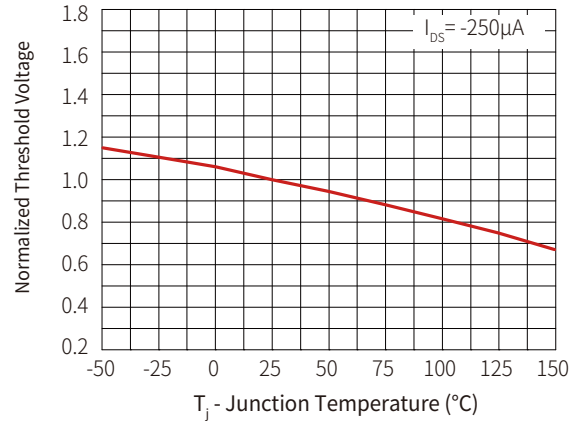


Figure 9: Normalized On Resistance

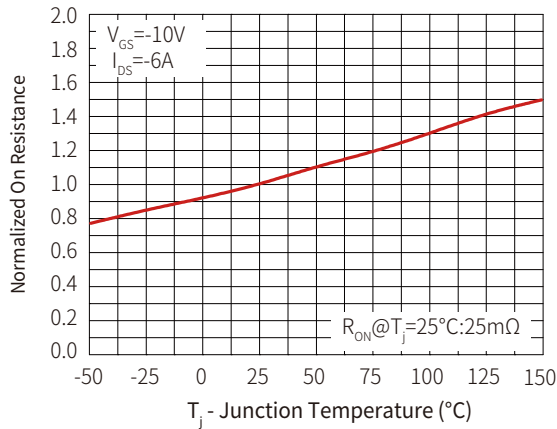


Figure 10: Diode Forward Current

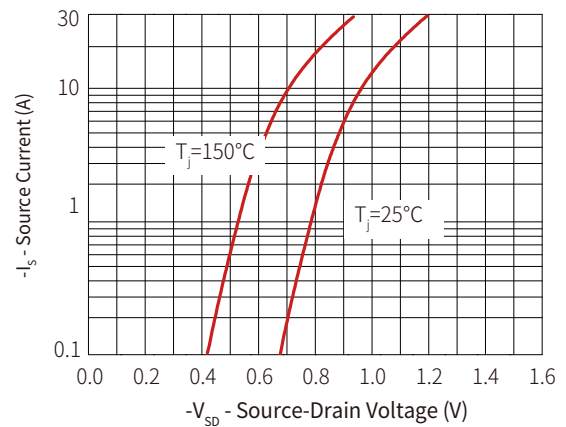


Figure 11: Capacitance

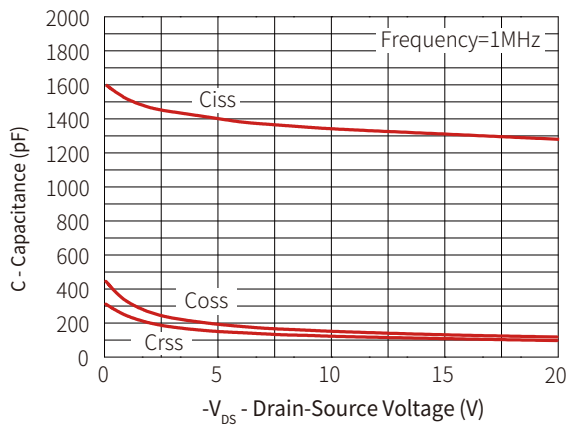
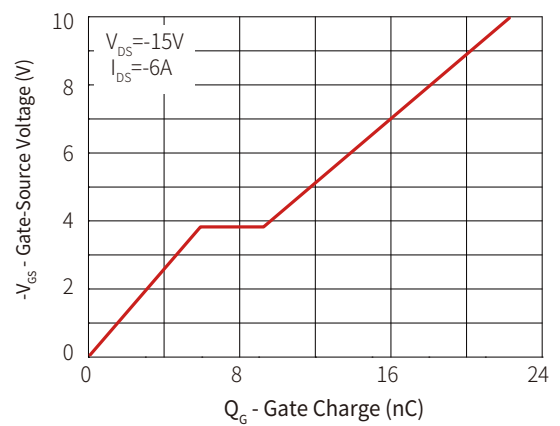
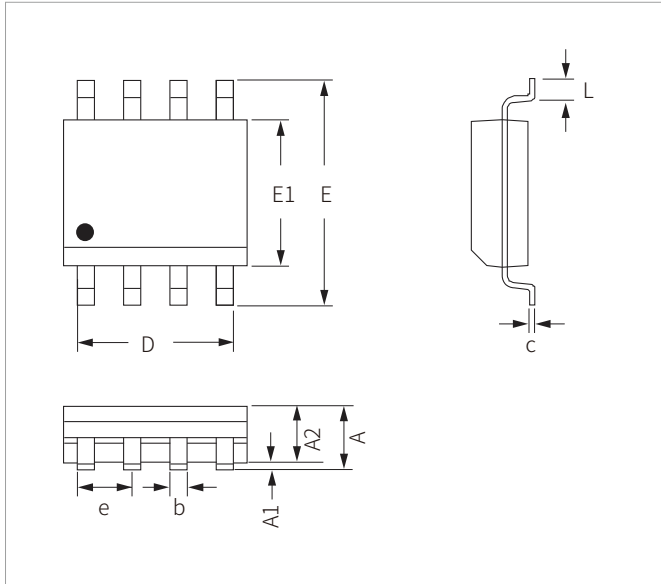


Figure 12: Gate Charge



SOP-8L PACKAGE INFORMATION



Ref.	Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.00	0.25
A2	1.15	1.50
D	4.80	5.00
E	5.80	6.20
E1	3.80	4.00
c	0.19	0.27
b	0.33	0.53
e	1.27 BSC	
L	0.40	1.27

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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