

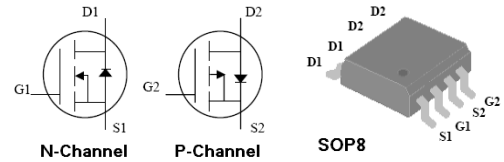
Features

- Low $R_{DS(on)}$ @ $V_{GS}=5V$
- 5V Logic Level Control
- N+P Dual Channel SOP8 Package
- Pb-Free, RoHS Compliant

Key Items	NMOS	PMOS	Unit
BVDSS	40	-40	V
ID	8	7	A
R _{DSON1}	14	28	mΩ
R _{DSON2}	19	33	mΩ

Applications

- High Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as wireless charger, Media Tablets, PMP, DSC, GPS, and Others



Order Information

Product	Package	Marking	Packing	Min Unit Quantity
PTS4614	SOP8	PTS4614	3000PCS/Reel	3000PCS

Absolute Maximum Ratings

Symbol	Parameter	Rating		Unit
		NMOS	PMOS	
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage	±20	±20	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage	40	-40	V
T _J	Maximum Junction Temperature	175		°C
T _{STG}	Storage Temperature Range	-50 to 150		°C
I _S	Diode Continuous Forward Current ^①	T _C = 25°C		A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested ^②	T _C = 25°C		A
I _D	Continuous Drain Current (V _{GS} =10V)	T _C = 25°C		A
		T _C = 100°C		
P _D	Maximum Power Dissipation	T _C = 25°C		W
R _{θJA}	Thermal Resistance Junction-Ambient			°C/W

N-Channel

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current ($T_c=25^\circ C$)	$V_{DS}=40V, V_{GS}=0V$	--	--	1	μA
	Zero Gate Voltage Drain Current ($T_c=125^\circ C$)	$V_{DS}=40V, V_{GS}=0V$	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=7A$	--	14	20	m Ω
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=5V, I_D=3.5A$	--	18	30	m Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V,$ $f=1MHz$	--	450	--	pF
C_{oss}	Output Capacitance		--	105	--	pF
C_{rss}	Reverse Transfer Capacitance		--	10	--	pF
Q_g	Total Gate Charge	$V_{DS}=20V, I_D=4A,$ $V_{GS}=4.5V$	--	12.5	--	nC
Q_{gs}	GateSource Charge		--	3.3	--	nC
Q_{gd}	GateDrain Charge		--	3.2	--	nC
Switching Characteristics						
$t_{d(on)}$	Turnon Delay Time	$V_{DD}=20V,$ $I_D=3A,$ $R_G=3.3\Omega,$ $V_{GS}=10V$	--	5	--	ns
t_r	Turnon Rise Time		--	3.2	--	ns
$t_{d(off)}$	TurnOff Delay Time		--	15	--	ns
t_f	TurnOff Fall Time		--	2.1	--	ns
Source Drain Diode Characteristics						
I_{SD}	Sourcedrain current(Body Diode) ^①	$T_c=25^\circ C$.25	--	--	A
V_{SD}	Forward on voltage	$T_j=25^\circ C, I_{SD}=4A,$ $V_{GS}=0V$	--	0.82	1.2	V

Notes:

- ① Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- ② Pulse width limited by maximum allowable junction temperature

P-Channel

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current ($T_c=25^\circ C$)	$V_{DS}=-40V, V_{GS}=0V$	--	--	1	μA
	Zero Gate Voltage Drain Current ($T_c=125^\circ C$)	$V_{DS}=-40V, V_{GS}=0V$	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-2.0	-3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-7A$	--	28	35	m Ω
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-5V, I_D=-3A$	--	33	45	m Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	$V_{DS}=-20V, V_{GS}=0V,$ $f=1MHz$	--	550	--	pF
C_{oss}	Output Capacitance		--	110	--	pF
C_{rss}	Reverse Transfer Capacitance		--	55	--	pF
Q_g	Total Gate Charge	$V_{DS}=-20V, I_D=-3A,$ $V_{GS}=-4.5V$	--	13	--	nC
Q_{gs}	Gate-Source Charge		--	4	--	nC
Q_{gd}	Gate-Drain Charge		--	3	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-20V,$ $I_D=-6A,$ $R_G=3.3\Omega,$ $V_{GS}=-4.5V$	--	8	--	ns
t_r	Turn-on Rise Time		--	5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	22	--	nS
t_f	Turn-Off Fall Time		--	8.5	--	nS
Source- Drain Diode Characteristics						
I_{SD}	Source-drain current(Body Diode)	$T_c=25^\circ C$	-3	--		A
V_{SD}	Forward on voltage	$T_j=25^\circ C, I_{SD}=-4A$ $V_{GS}=0V$	--	-0.83	-1.2	V

Notes:

- ① Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- ② Pulse width limited by maximum allowable junction temperature.

N-Channel Typical Characteristics

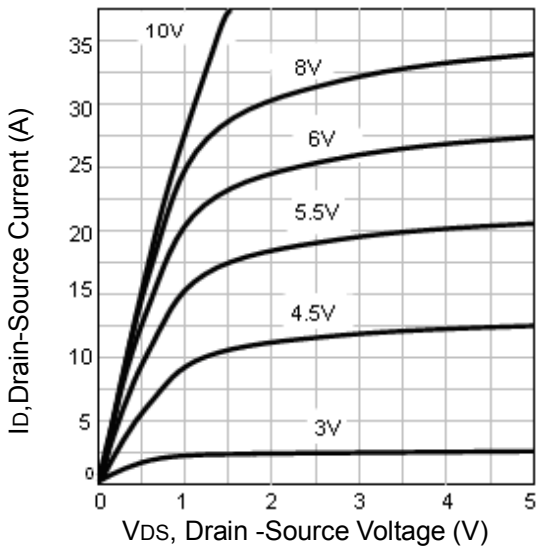


Fig1. Typical Output Characteristics

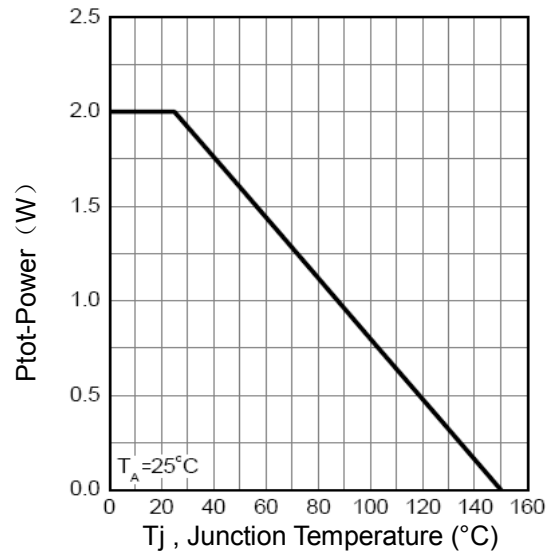


Fig2. Power Dissipation

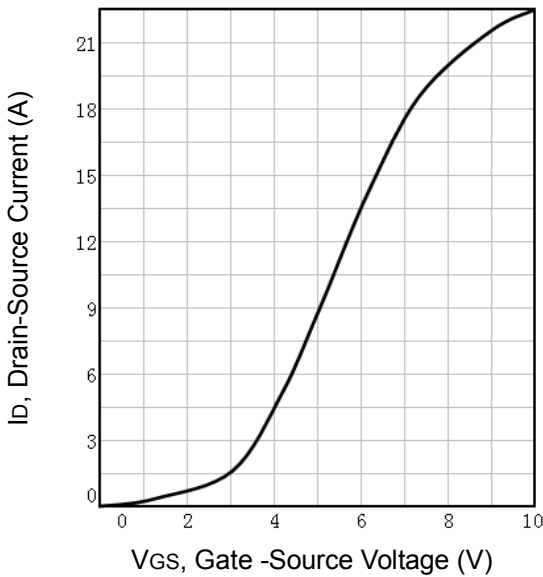


Fig3. Typical Transfer Characteristics

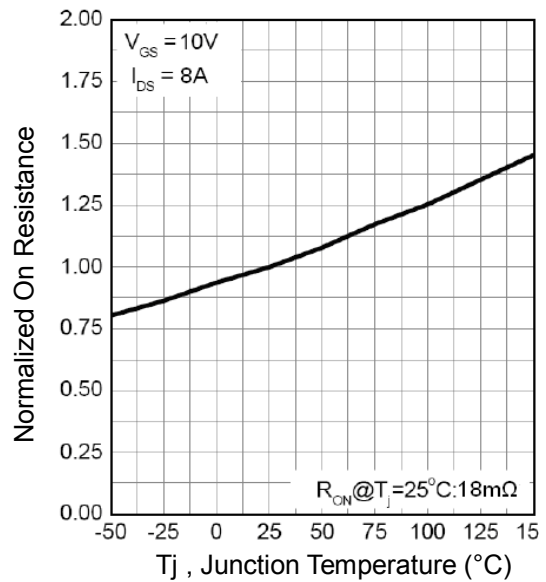


Fig4. Normalized On-Resistance Vs. Temperature

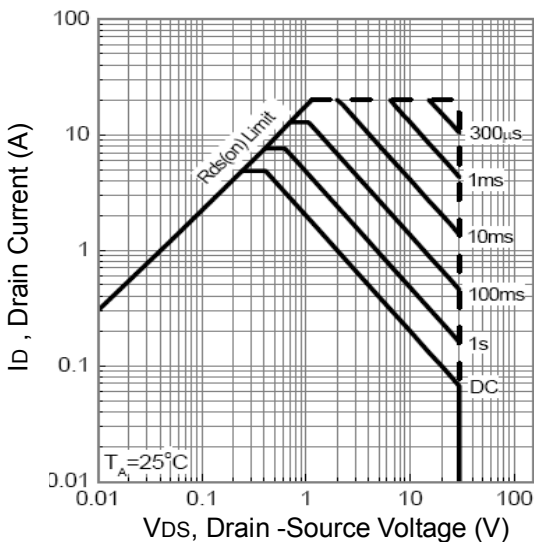


Fig5. Maximum Safe Operating Area

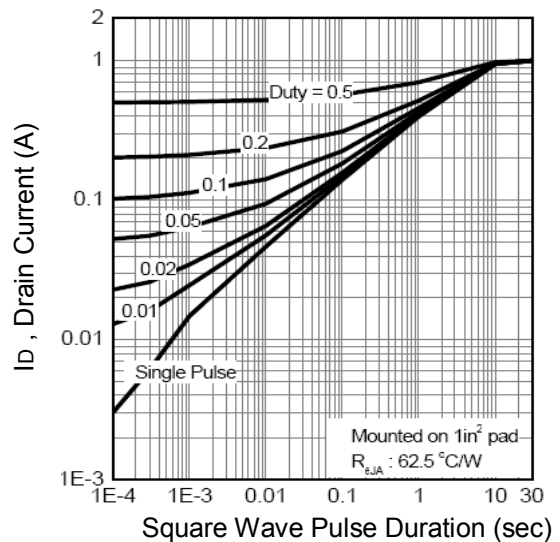


Fig6. Thermal Transient Impedance

N-Channel Typical Characteristics

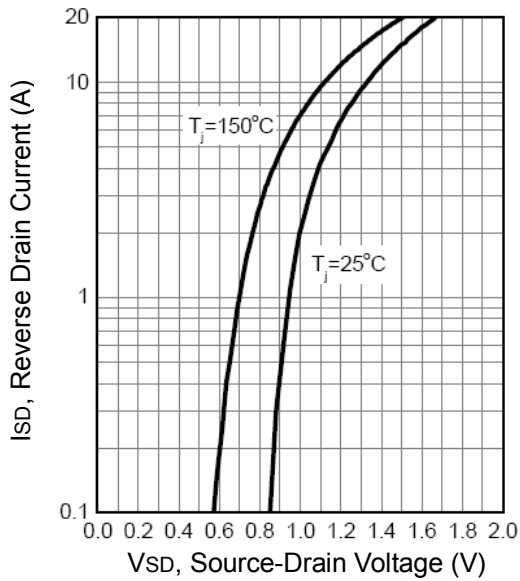


Fig7. Typical Source-Drain Diode Forward Voltage

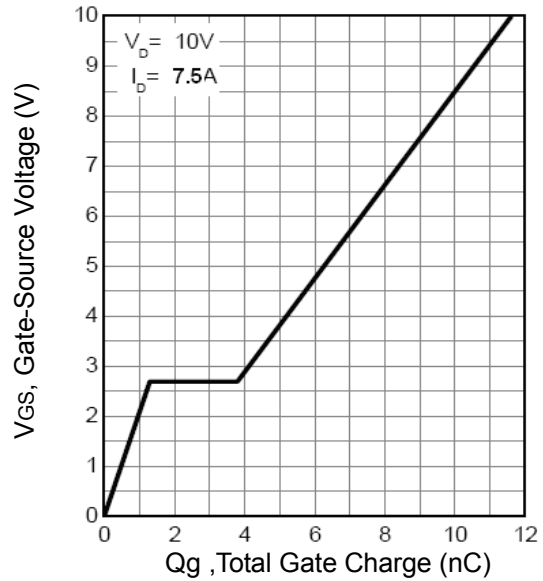


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

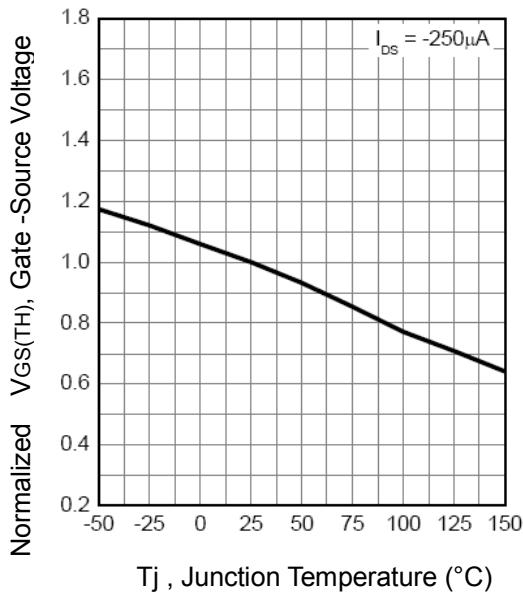


Fig9. Threshold Voltage Vs. Temperature

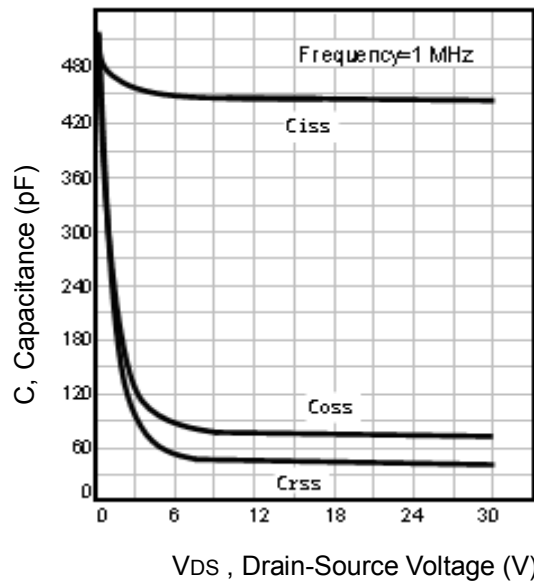


Fig10. Typical Capacitance Vs. Drain-Source Voltage

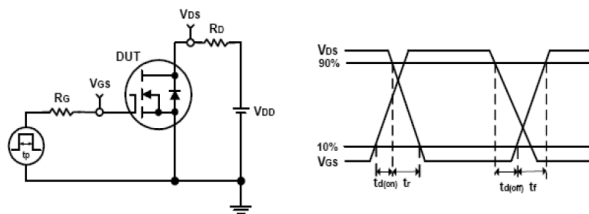


Fig11. Switching Time Test Circuit and waveforms

P-Channel Typical Characteristics

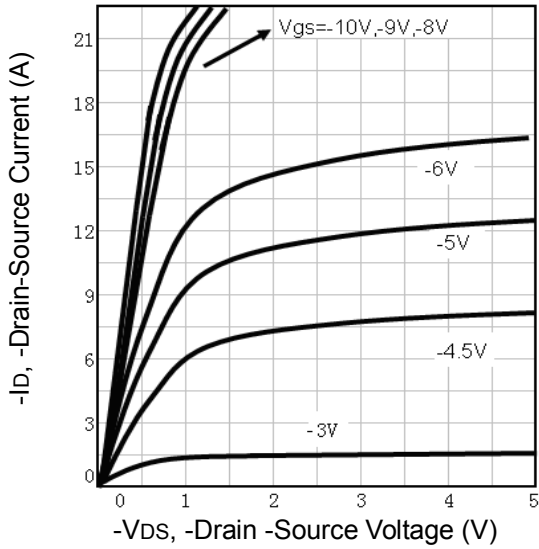


Fig1. Typical Output Characteristics

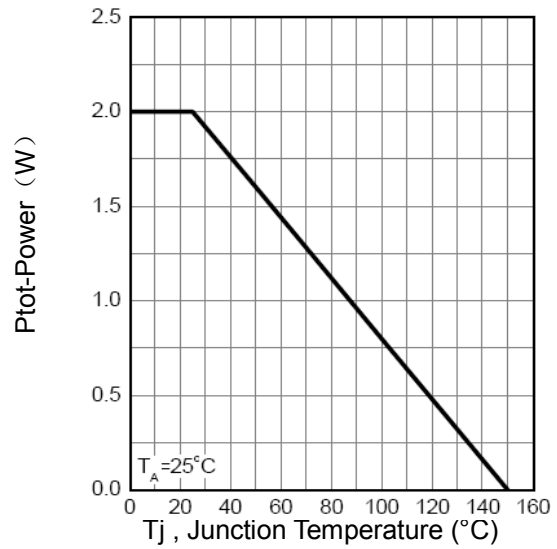


Fig2. Power Dissipation

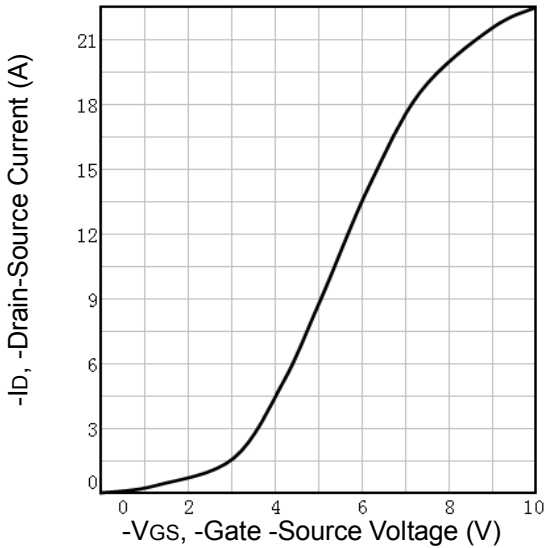


Fig3. Typical Transfer Characteristics

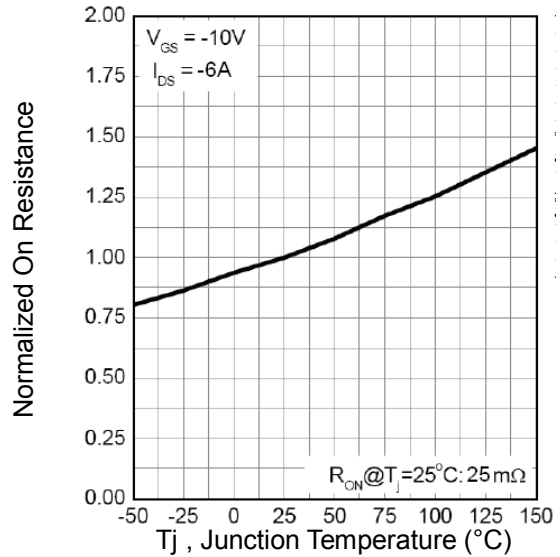


Fig4. Normalized On-Resistance Vs. Temperature

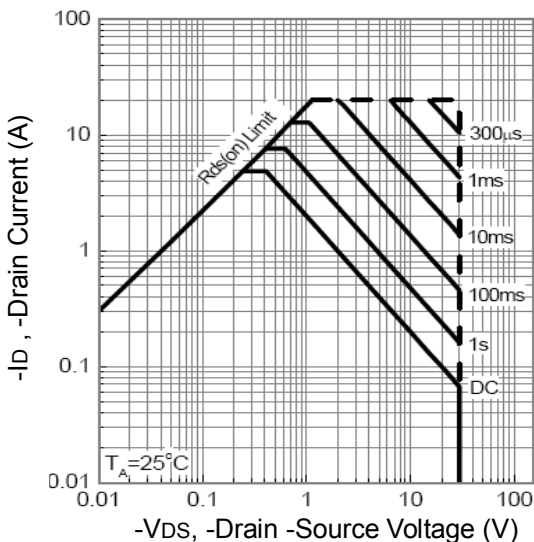


Fig5. Maximum Safe Operating Area

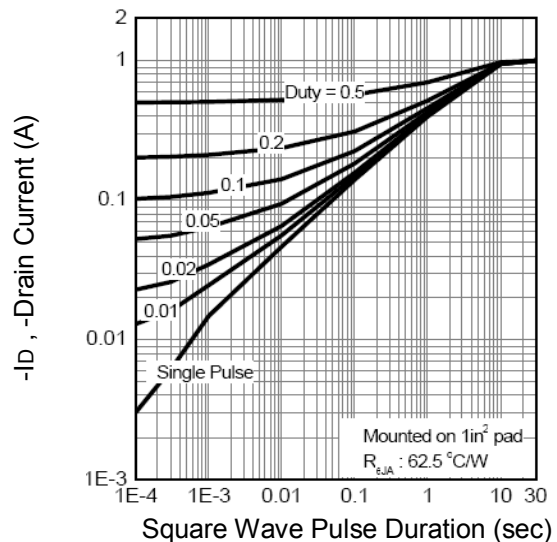


Fig6. Thermal Transient Impedance

P-Channel Typical Characteristics

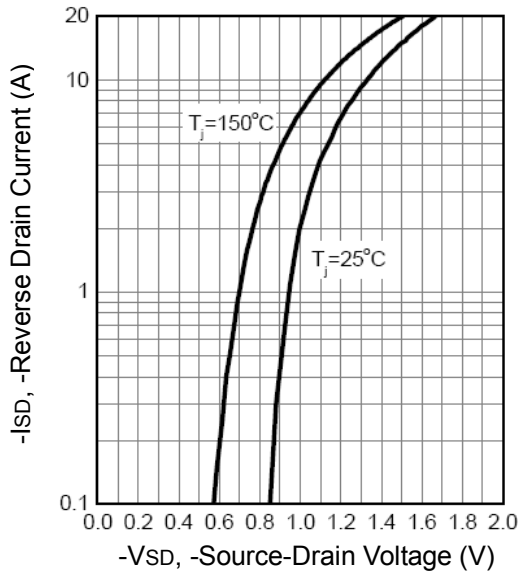


Fig7. Typical Source-Drain Diode Forward Voltage

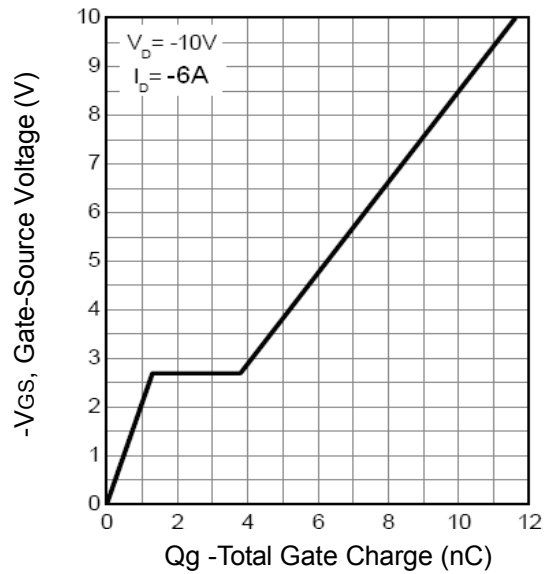


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

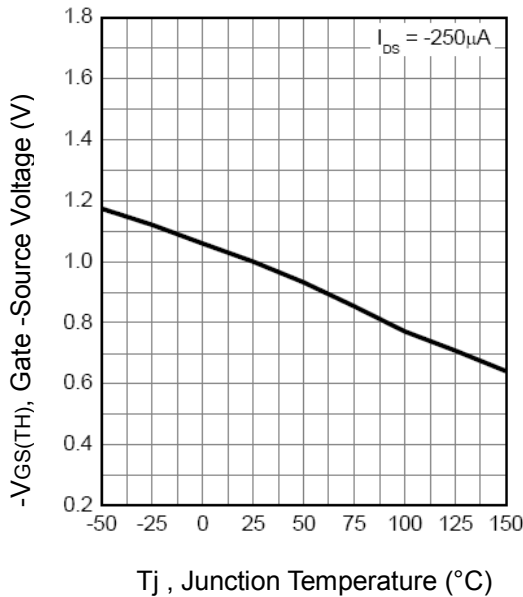


Fig9. Threshold Voltage Vs. Temperature

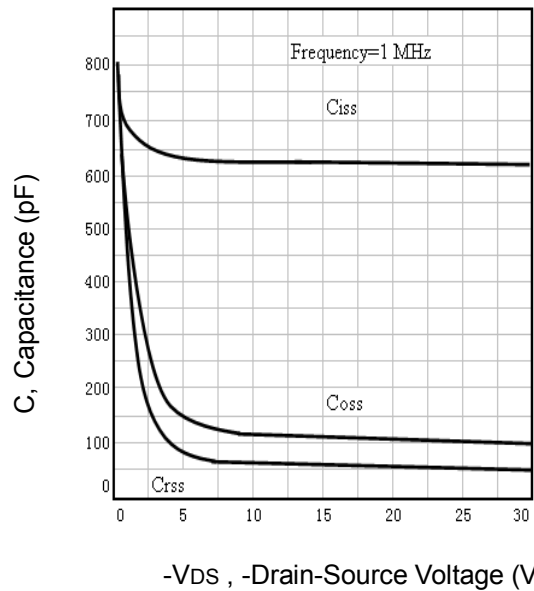


Fig10. Typical Capacitance Vs. Drain-Source Voltage

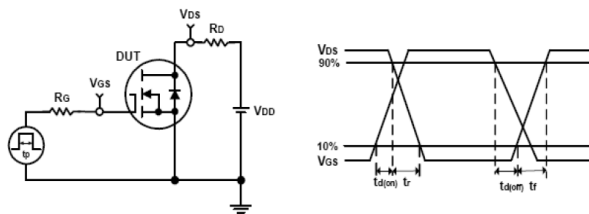
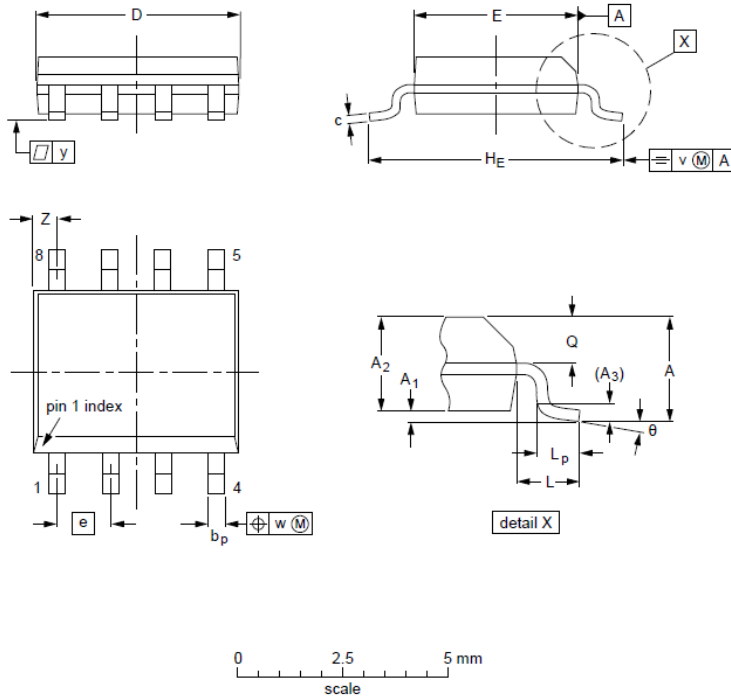


Fig11. Switching Time Test Circuit and waveforms

Package Out Line Dimensions



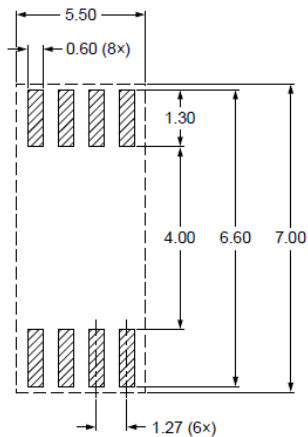
DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽²⁾	e	H _E	L	L _p	Q	v	w	y	Z ⁽¹⁾	θ
mm	1.75	0.25 0.10	1.45 1.25	0.25	0.49 0.36	0.25 0.19	5.0 4.8	4.0 3.8	1.27	6.2 5.8	1.05	1.0 0.4	0.7 0.6	0.25	0.25	0.1	0.7 0.3	8° 0°
inches	0.069	0.010 0.004	0.057 0.049	0.01	0.019 0.014	0.0100 0.0075	0.20 0.19	0.16 0.15	0.05	0.244 0.228	0.041	0.039 0.016	0.028 0.024	0.01	0.01	0.004	0.028 0.012	

Notes

1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.
2. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.

Reflow soldering footprint for SOP8



solder lands
 occupied area placement accuracy ± 0.25 Dimensions in mm

Customer Service

TEL: (86-755) -26902410 FAX: (86-755) -26907027

Mail: Sales@vqsemi.com WEB: www.puolop.com