

1.Description

The SOP-8 has been modified through a customized eadframe for enhanced thermalcharacteristics and multiple-die capabilitymaking it ideal in a variety of powerapplications.With theseimprovements.multiple devices can be usedinanapplication with dramatica vreducedboard space. The package is designed for vaporphase, infra red, or wave sodering technigues.

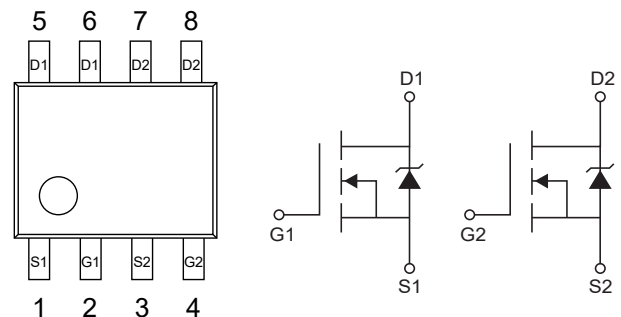
2.Features

- $V_{DS(V)}=30V$
- $I_D=6.5A$
- $R_{DS(ON)}<29m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<46m\Omega(V_{GS}=4.5V)$
- Generation V Technolog
- Ultra Low On-Resistance
- Surface Mount
- Fully Avalanche Rated
- Lead-Free

3.Pinning Information

Pin	Symbol	Description
2,4	G1,G2	GATE
1,3	S1,S2	SOURCE
5,6,7,8	D1,D2	DRAIN

SOP-8





4. Absolute Maximum Ratings $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ⑤	$T_A=25^{\circ}\text{C}$	I_D	6.5	A
	$T_A=70^{\circ}\text{C}$		5.2	
Pulsed Drain Current		I_{DM}	30	
Continuous Source Current (Diode Conduction)		I_S	2.5	
Maximum Power Dissipation ⑤	$T_A=25^{\circ}\text{C}$	P_D	2	W
	$T_A=70^{\circ}\text{C}$		1.3	W
Single Pulse Avalanche Energy ②		I_{AR}	82	mJ
Avalanche Current		E_{AS}	4	A
Repetitive Avalanche Energy		E_{AR}	0.2	mJ
Peak Diode Recovery dv/dt ③		dv/dt	5.8	V/nS
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

5. Thermal Resistance Rating

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ⑤	$R_{\theta JA}$		62.5	$^{\circ}\text{C/W}$



6. Electrical Characteristics $T_J=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/T_J$	$I_D=1\text{mA}$, Reference to 25°C		0.022		V/ $^{\circ}\text{C}$
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=5.8\text{A}$ ④		23	29	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=2\text{A}$ ④		32	46	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1			V
Forward Transconductance	g_{FS}	$V_{DS}=15\text{V}$, $I_D=5.8\text{A}$		14		S
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^{\circ}\text{C}$			25	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20\text{V}$			100	nA
Gate-to-Source Reverse Leakage		$V_{GS}=-20\text{V}$			-100	
Total Gate Charge	Q_g	$I_D=5.8\text{A}$		22	33	nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=15\text{V}$, $V_{GS}=10\text{V}$		2.6	3.9	
Gate-to-Drain ("Miller") Charge	Q_{gd}	See Fig. 10 ④		6.4	9.6	
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=15\text{V}$		8.1	12	ns
Rise Time	t_r	$I_D=1\text{A}$		8.9	13	ns
Turn-Off Delay Time	$t_{D(off)}$	$R_G=6\Omega$		26	39	ns
Fall Time	t_f	$R_D=15\Omega$		17	26	ns
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$		650		pF
Output Capacitance	C_{oss}	$V_{DS}=25\text{V}$		320		pF
Reverse Transfer Capacitance	C_{rss}	$f=1.0\text{MHz}$, See Fig. 9		130		pF



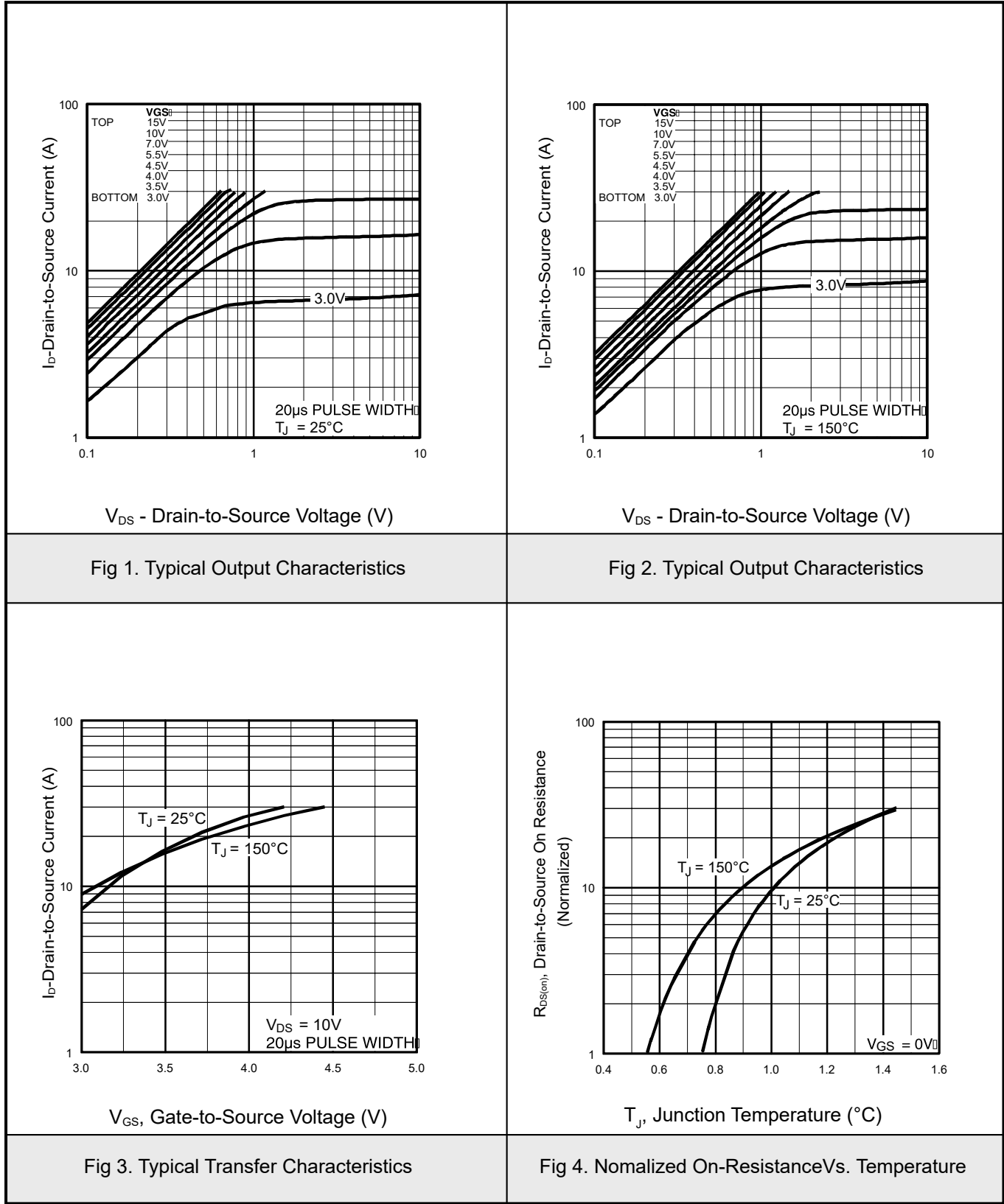
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			2.5	A
Pulsed Source Current (Body Diode) ①	I_{SM}				30	
Diode Forward Voltage	V_{SD}	$T_J=25^{\circ}\text{C}, I_S=1.7\text{A}, V_{GS}=0\text{V}$ ③		0.78	1	V
Reverse Recovery Time	t_{rr}			45	68	ns
Reverse Recovery Charge	Q_{rr}			58	87	nC

Notes:

- ① Repetitive rating; pulse width limited by max.junction temperature.(See fig.11)
- ② Starting $T_J=25^{\circ}\text{C}$, $L=10\text{mH}$, $R_G=25\Omega$, $I_{AS}=4.0\text{A}$.
- ③ $I_{SD}\leq 4.0\text{A}$, $\text{d}I/\text{d}t\leq 74\text{A}/\mu\text{s}$, $V_{DD}\leq V_{(BR)DSS}$, $T_J\leq 150^{\circ}\text{C}$
- ④ Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.
- ⑤ Surface mounted on FR-4 board, $t\leq 10\text{sec}$.

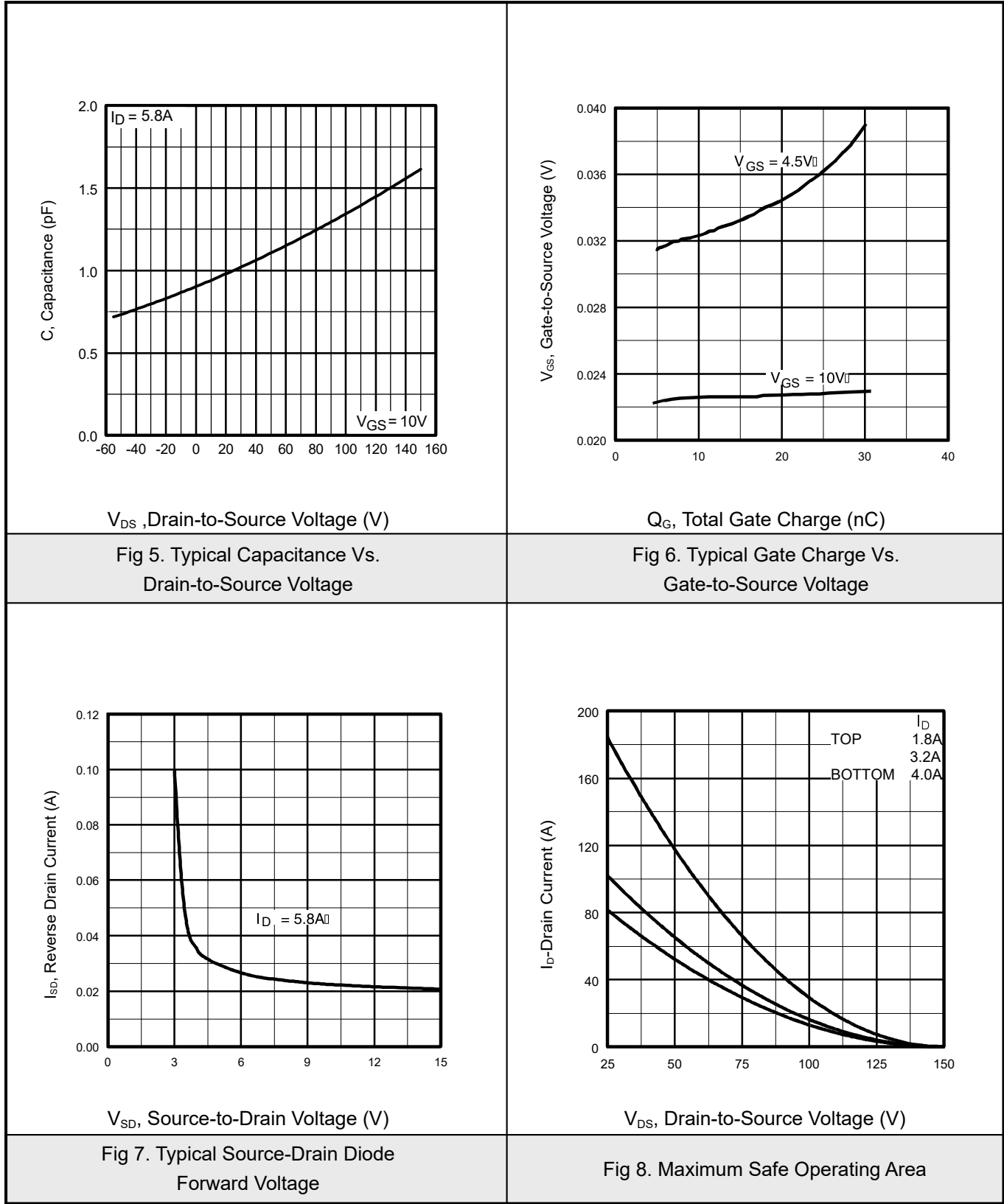


7.1Typical Characterisitics



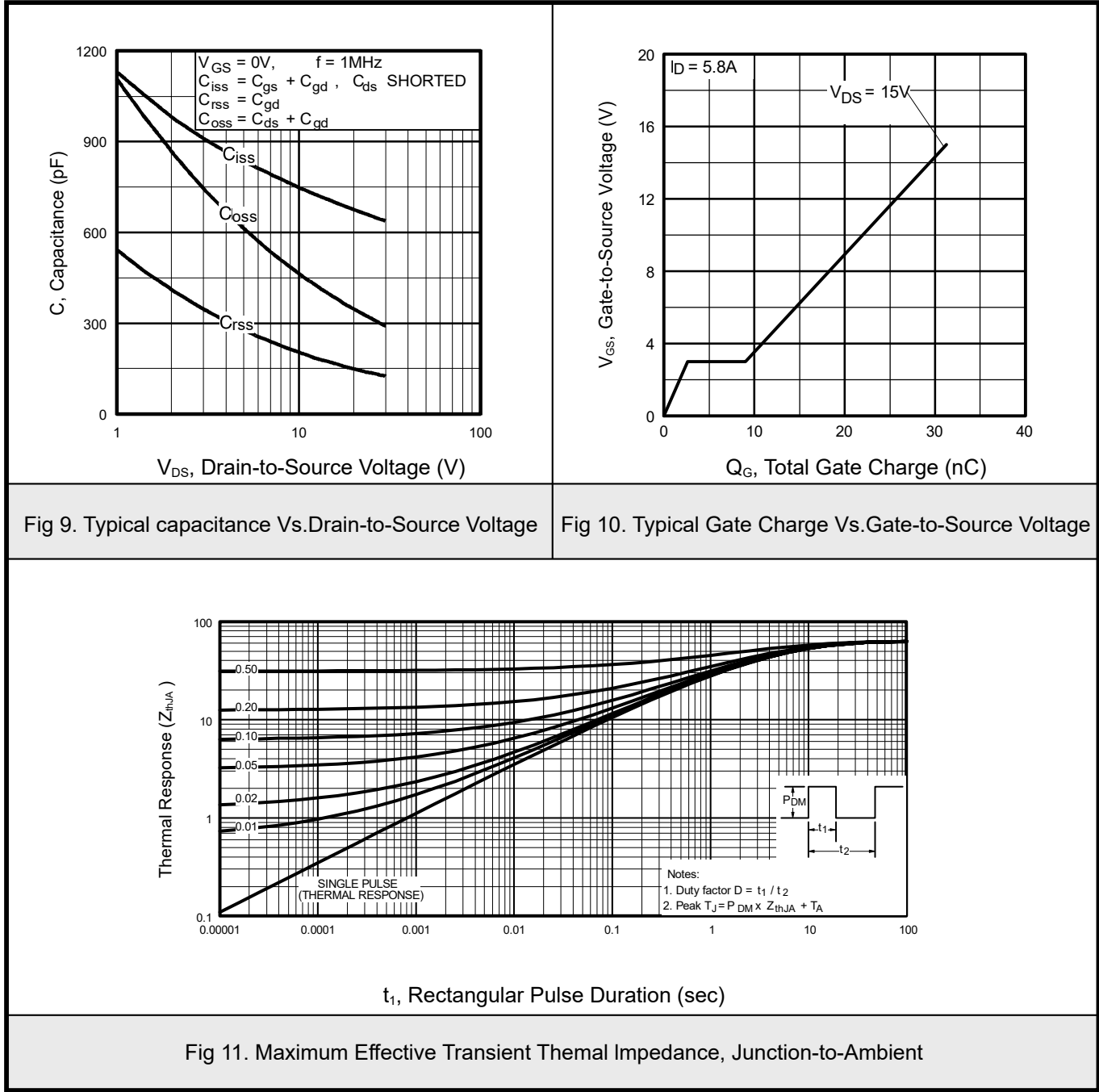


7.2Typical Characterisitics



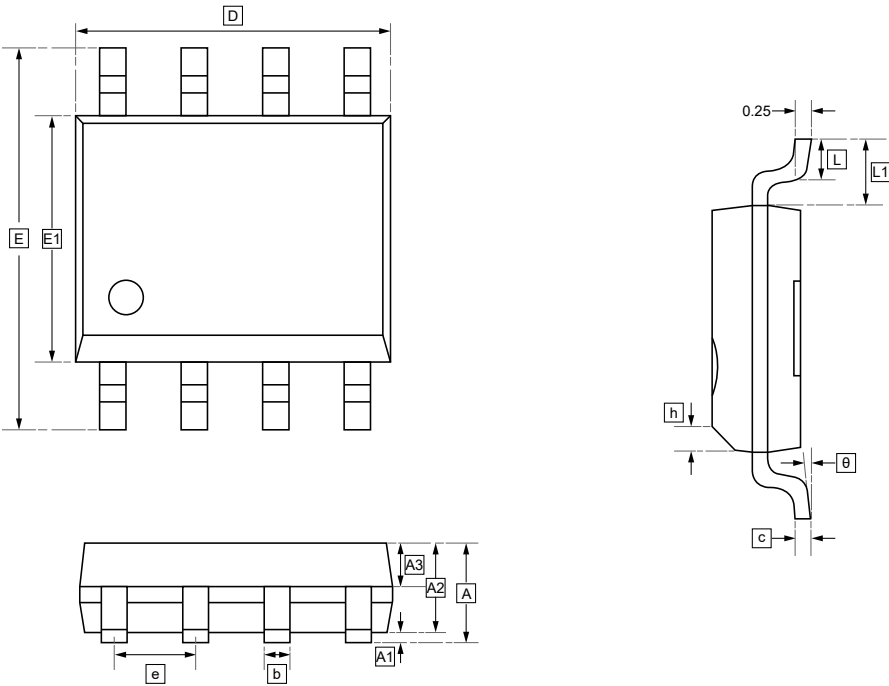


7.3Typical Characteristics





8.SOP-8 Package Outline Dimensions



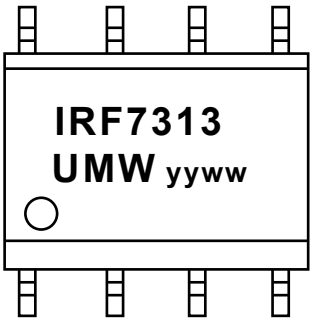
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.80	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.00	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRF7313TR	SOP-8	3000	Tape and reel



10.Disclaimer

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