

1.Features

- $V_{DS(V)}=30V$
- $R_{DS(ON)}<7.5m\Omega(V_{GS}=10)$
- $R_{DS(ON)}<9m\Omega(V_{GS}=4.5V)$

3.Benefits

- Ultra-Low Gate Impedance
- Very Low $R_{DS(ON)}=4.5V V_{GS}$

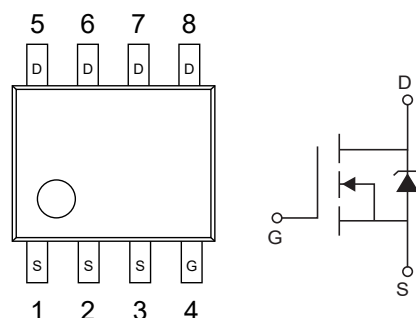
2.Applications

- High Frequency DC-DC Converters with Synchronous Rectification
- Lead-Free

4.Pinning information

Pin	Symbol	Description
1,2,3	S	SOURCE
4	G	GATE
5,6,7,8	D	DRAIN

SOP-8



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

Parameter		Symbol	Rating	Units
Drain- Source Voltage		V_{DS}	30	V
Gate-to-Source Voltage		V_{GS}	± 12	A
Continuous Drain Current, $V_{GS}=-10V$	$T_A=25^{\circ}C$	I_D	15	A
Continuous Drain Current, $V_{GS}=-10V$	$T_A=70^{\circ}C$		12	A
Pulsed Drain Current ①		I_{DM}	120	W
Maximum Power Dissipation ③	$T_A=25^{\circ}C$	P_D	2.5	W
Maximum Power Dissipation ③	$T_A=70^{\circ}C$		1.6	mW/ $^{\circ}C$
Linear Derating Factor			0.02	V
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$



6.Thermal resist ance rating

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ④	$R_{\theta JA}$		50	°C/W

Notes:

- ① Repetitive rating; pulse width limited by max.junction temperature.
- ② Starting $T_J=25^{\circ}\text{C}$, $L=9.4\text{mH}$, $R_G=25\Omega$, $I_{AS}=8\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board, $t<10\text{ sec}$.



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

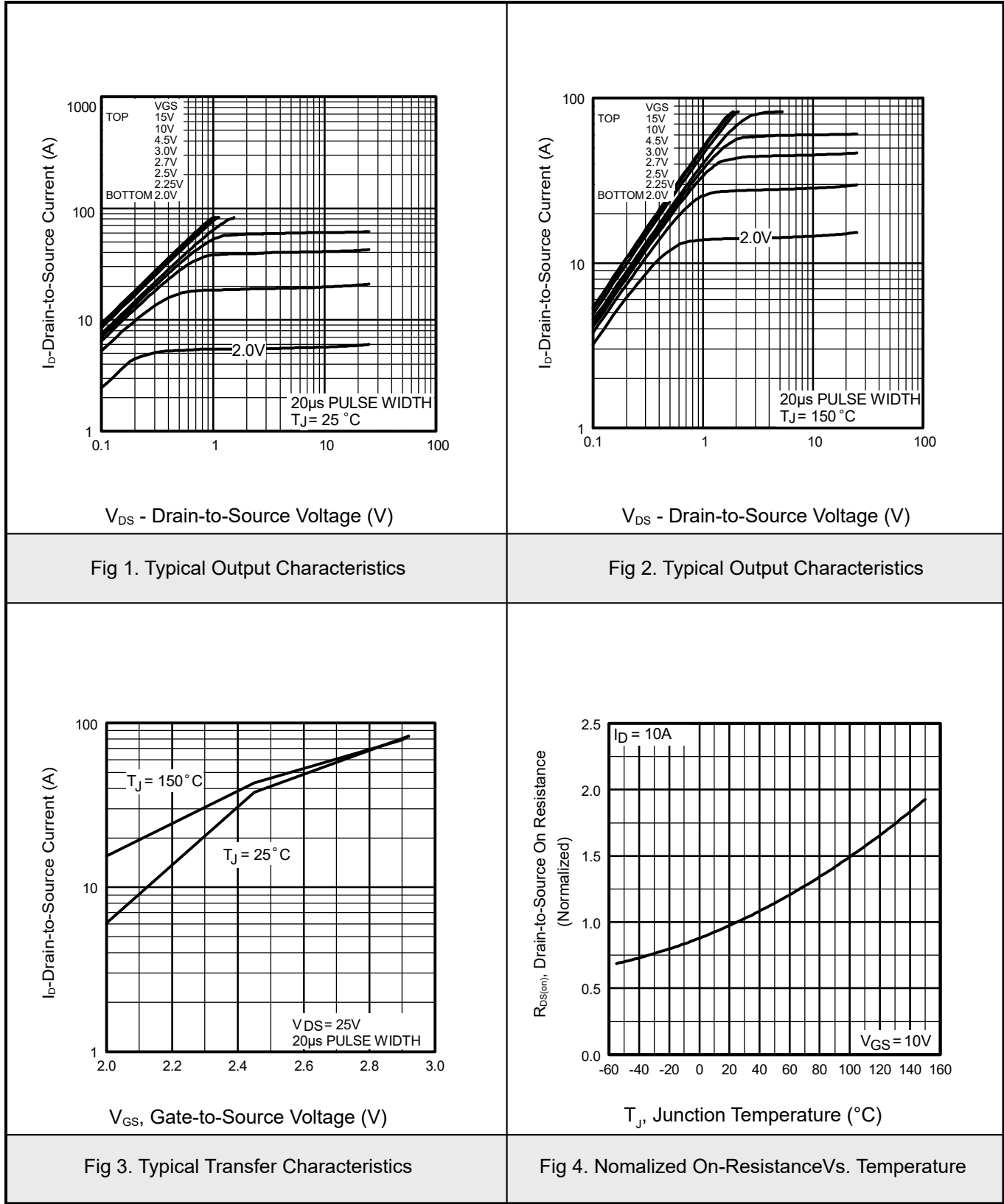
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D =250μA, V _{GS} =0V	30			V
Breakdown Voltage Temp. Coefficient	ΔV _{(BR)DSS} /T _J	I _D =1mA,Reference to 25°C		0.029		V/°C
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =15A ④		6	7.5	mΩ
		V _{GS} =4.5V, I _D =12A ④		6.9	9	
		V _{GS} =2.8V, I _D =3.5A ④		10	20	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.6		2	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			20	μA
		V _{DS} =24V,V _{GS} =0V,T _J =125°C			100	μA
Gate-to-Source Forward Leakage	I _{GSS}	V _{GS} =12V			200	nA
Gate-to-Source Reverse Leakage		V _{GS} =-12V			-200	nA
Dynamic						
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =15V	44			S
Total Gate Charge	Q _g	V _{DS} =24V V _{GS} =5V ③ I _D =15A		37	56	nC
Gate-to-Source Charge	Q _{gs}			8.9	13	nC
Gate-to-Drain ("Miller") Charge	Q _{gd}			13	20	nC
Output Gate Charge	Q _{oss}	V _{GS} =0V, V _{DS} =16V		23	35	nC
Turn-On Delay Time	t _{D(on)}	V _{DD} =15V I _D =1A R _G =6Ω V _{GS} =4.5V ③		17		ns
Rise Time	t _r			18		ns
Turn-Off Delay Time	t _{D(off)}			51		ns
Fall Time	t _f			44		ns
Input Capacitance	C _{iss}	V _{GS} =0V V _{DS} =25V f=1.0MHz		3480		pF
Output Capacitance	C _{oss}			870		pF
Reverse Transfer Capacitance	C _{rss}			100		pF
Avalanche Characteristics						
Single Pulse Avalanche Energy ②	E _{AS}				64	mJ
Avalanche Current ①	I _{AR}				99	A



Diode 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}				120	
Diode Forward Voltage	V_{SD}		$T_J=25^{\circ}C, I_S=2.5A, V_{GS}=0V$ ③		1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}C, I_F=2.5A$		64	96	ns
Reverse Recovery Charge	Q_{rr}			99	150	nC

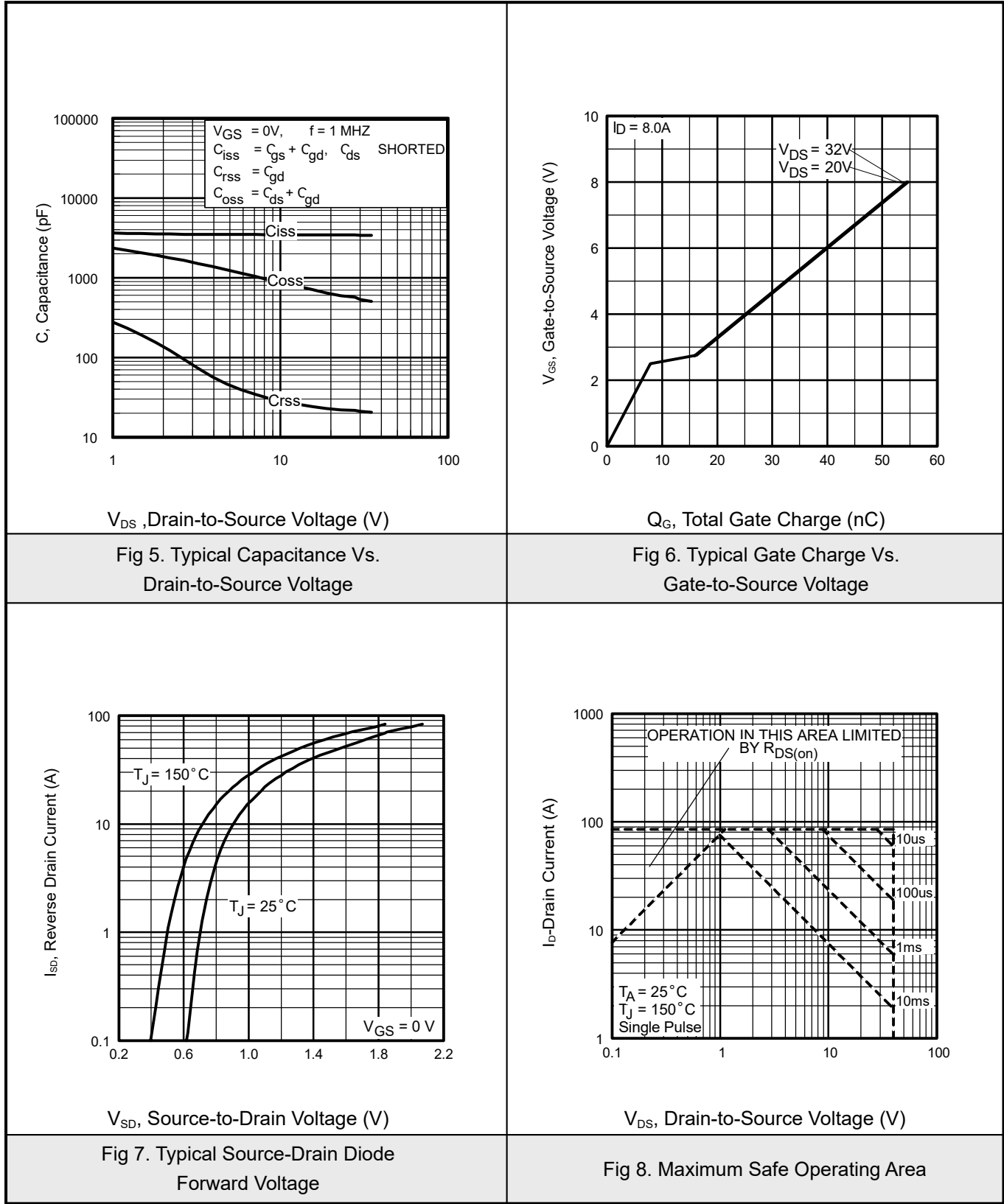


8.1 Typical Characteristics



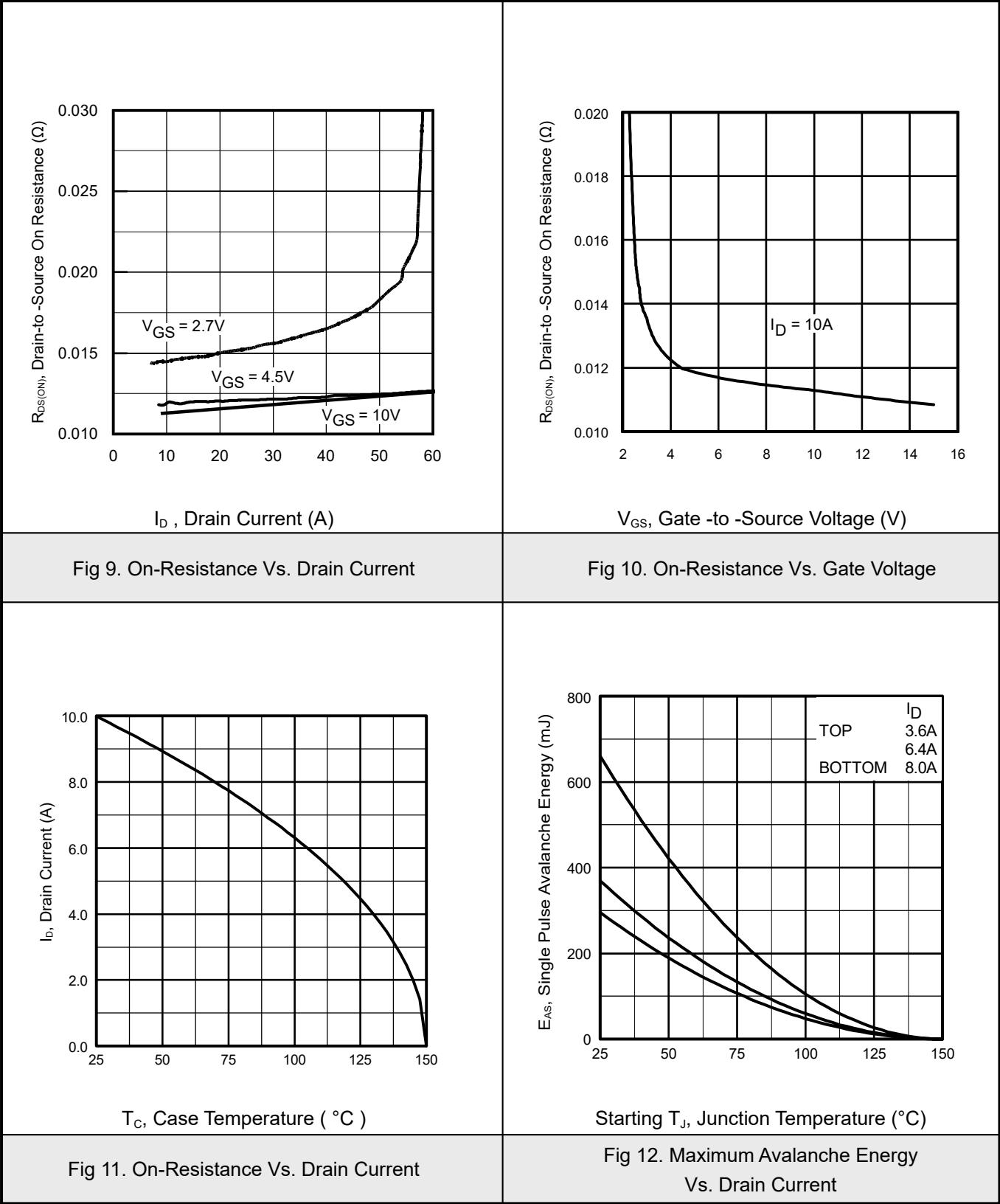


8.2Typical Characteristics



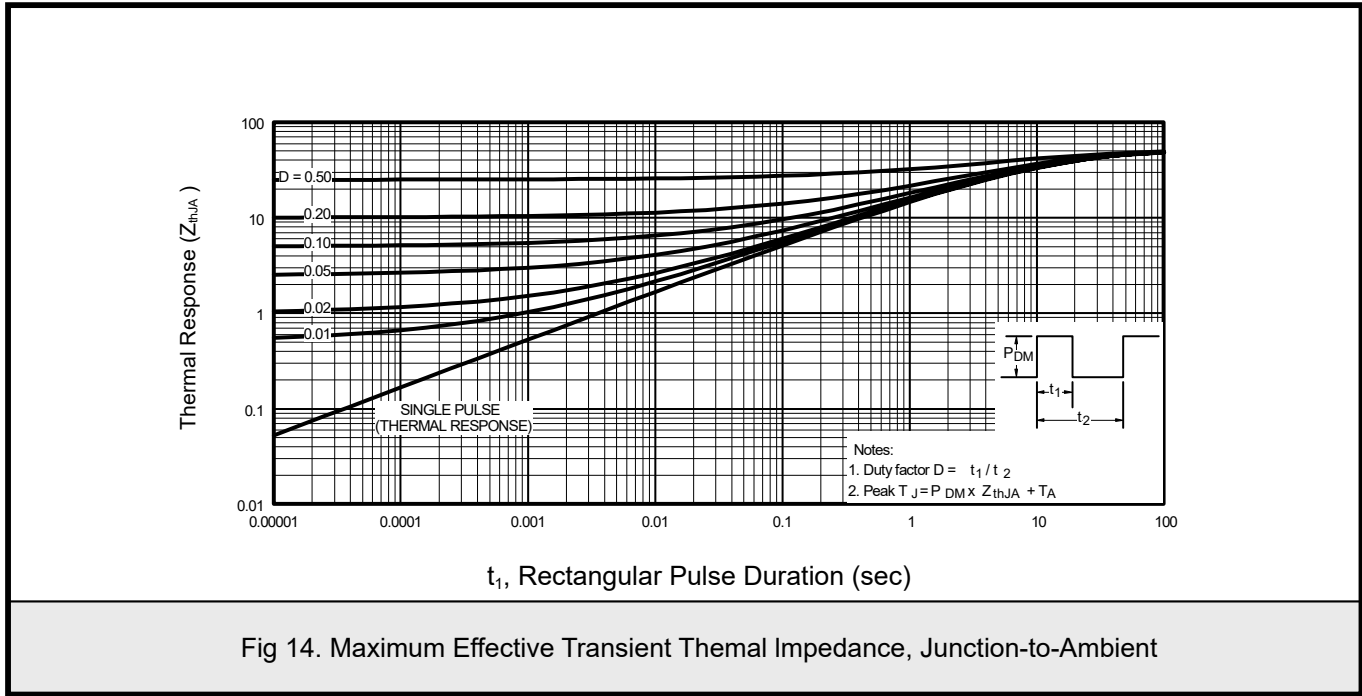


8.3Typical Characterisitics





8.4Typical Characterisitics





8.5 Typical Characteristics

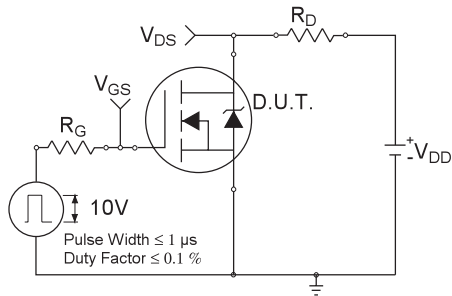


Fig 15a. Switching Time Test Circuit

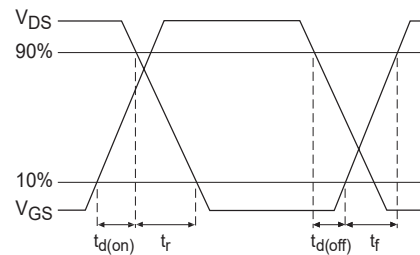


Fig 15b. Switching Time Waveforms

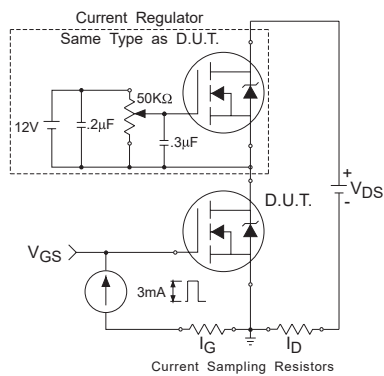


Fig 16a. Basic Gate Charge Waveform

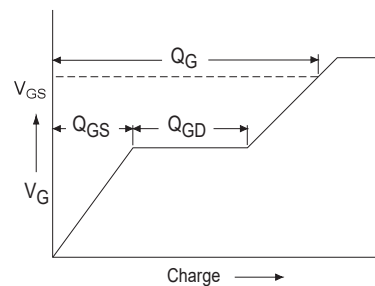


Fig 16b. Basic Gate Charge Waveform

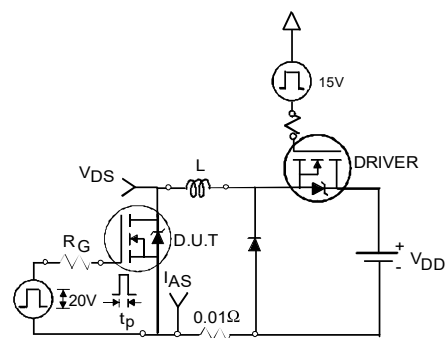
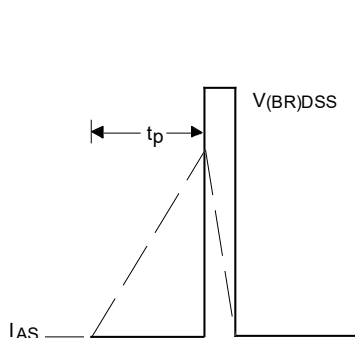
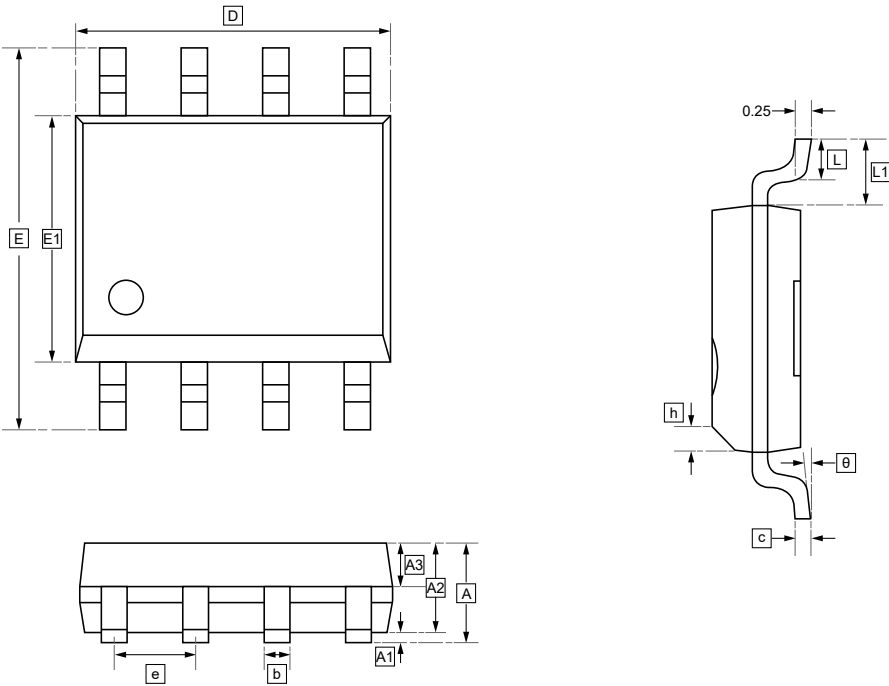


Fig 17a&b. Unclamped Inductive Test circuit and Waveforms



9.SOP-8 Package Outline Dimensions



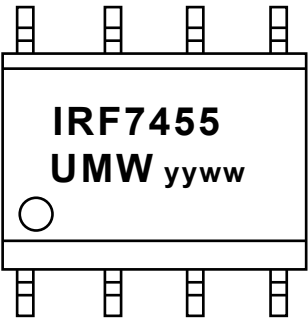
DIMENSIONS (mm are the original dimensions)

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°



10.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRF7455TR	SOP-8	3000	Tape and reel



11.Disclaimer

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