

1.Features

- $V_{DS(V)}=30V$
- $I_D=16A(V_{GS}=10V)$
- $R_{DS(ON)}<6.5m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<7.5m\Omega(V_{GS}=4.5V)$

3.Benefits

- Very Low $R_{DS(ON)}=4.5V V_{GS}$
- Low Charge and Low Gate Impedance to Reduce Switching Losses

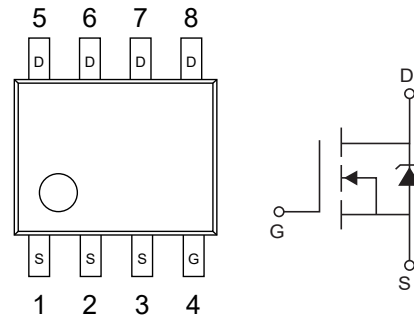
2.Applications

- High Frequency DC-DC Converters with Synchronous Rectification
- Lead-Free
- Fully Characterized Avalanche Voltage and Current

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	16	A
Continuous Drain Current, $V_{GS}=10V$	$T_A=70^\circ C$		13	A
Pulsed Drain Current ①		I_{DM}	130	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/°C
Linear Derating Factor			0.02	V
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C



6.Thermal resist ance rating

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



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

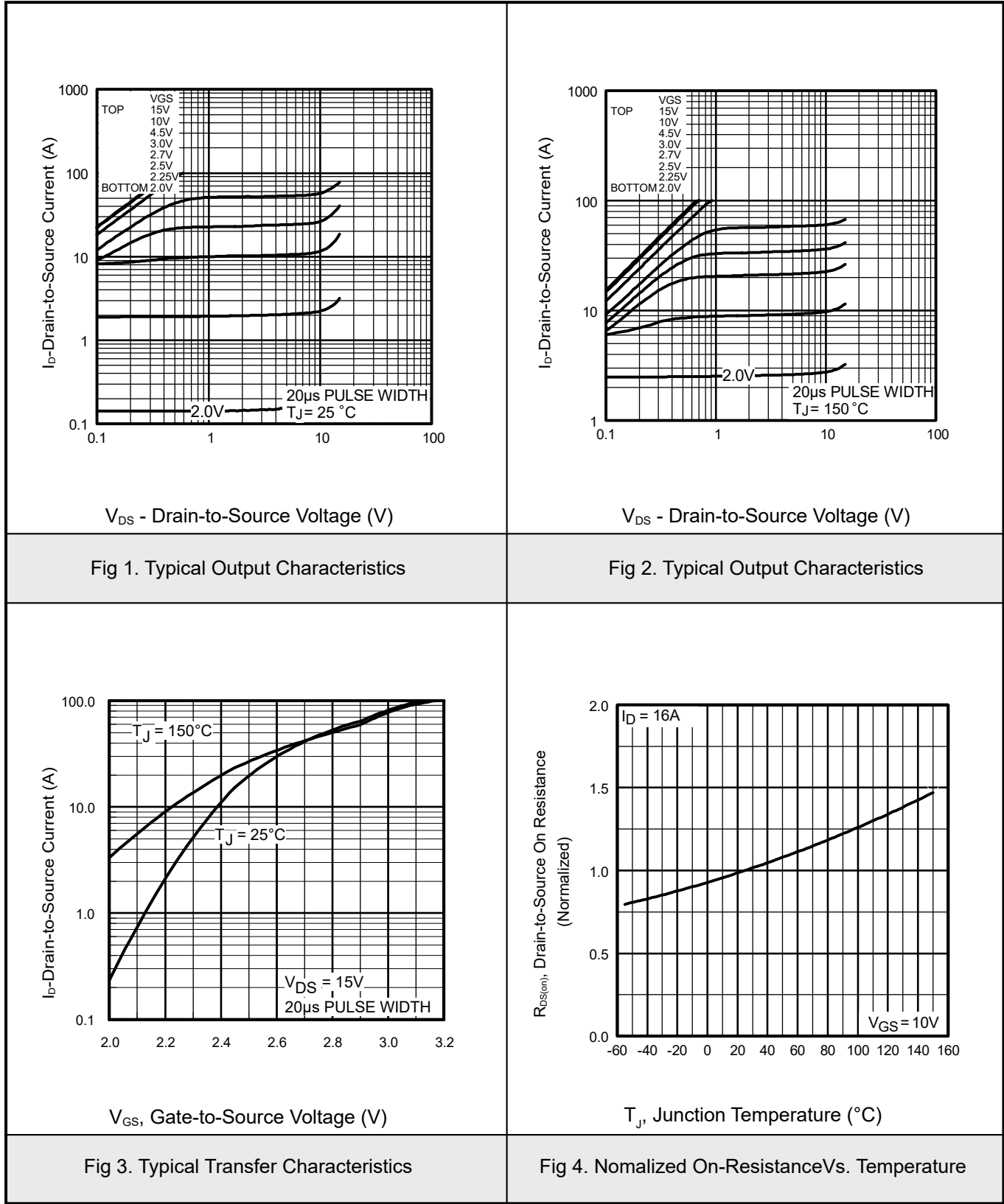
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D =250μA, V _{GS} =0V	30			V
Breakdown Voltage Temp. Coefficient	ΔV _{(BR)DSS} /T _J	I _D =1mA,Reference to 25°C		0.024		V/°C
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =16A ③		4.7	6.5	mΩ
		V _{GS} =4.5V, I _D =13A ③		5.7	7.5	
		V _{GS} =2.8V, I _D =3.5A ③		11	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} =16V, V _{GS} =0V			20	μA
		V _{DS} =16V,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 =16V	44			S
Total Gate Charge	Q _g	V _{DS} =16V V _{GS} =5V ③ I _D =16A		41	62	nC
Gate-to-Source Charge	Q _{gs}			9.7	15	nC
Gate-to-Drain ("Miller") Charge	Q _{gd}			18	27	nC
Turn-On Delay Time	t _{D(on)}	V _{DD} =10V I _D =1A R _G =6Ω V _{GS} =4.5V ③		20		ns
Rise Time	t _r			25		ns
Turn-Off Delay Time	t _{D(off)}			50		ns
Fall Time	t _f			52		ns
Input Capacitance	C _{iss}	V _{GS} =0V V _{DS} =15V f=1.0MHz		3640		pF
Output Capacitance	C _{oss}			1570		pF
Reverse Transfer Capacitance	C _{rss}			330		pF
Avalanche Characteristics						
Single Pulse Avalanche Energy ②	E _{AS}				250	mJ
Avalanche Current ①	I _{AR}				16	A
Repetitive Avalanche Energy ①	E _{AR}				0.25	mJ



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}				130	
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}	$T_J=25^{\circ}C, I_F=2.5A$		48	72	ns
Reverse Recovery Charge	Q_{rr}			74	110	nC

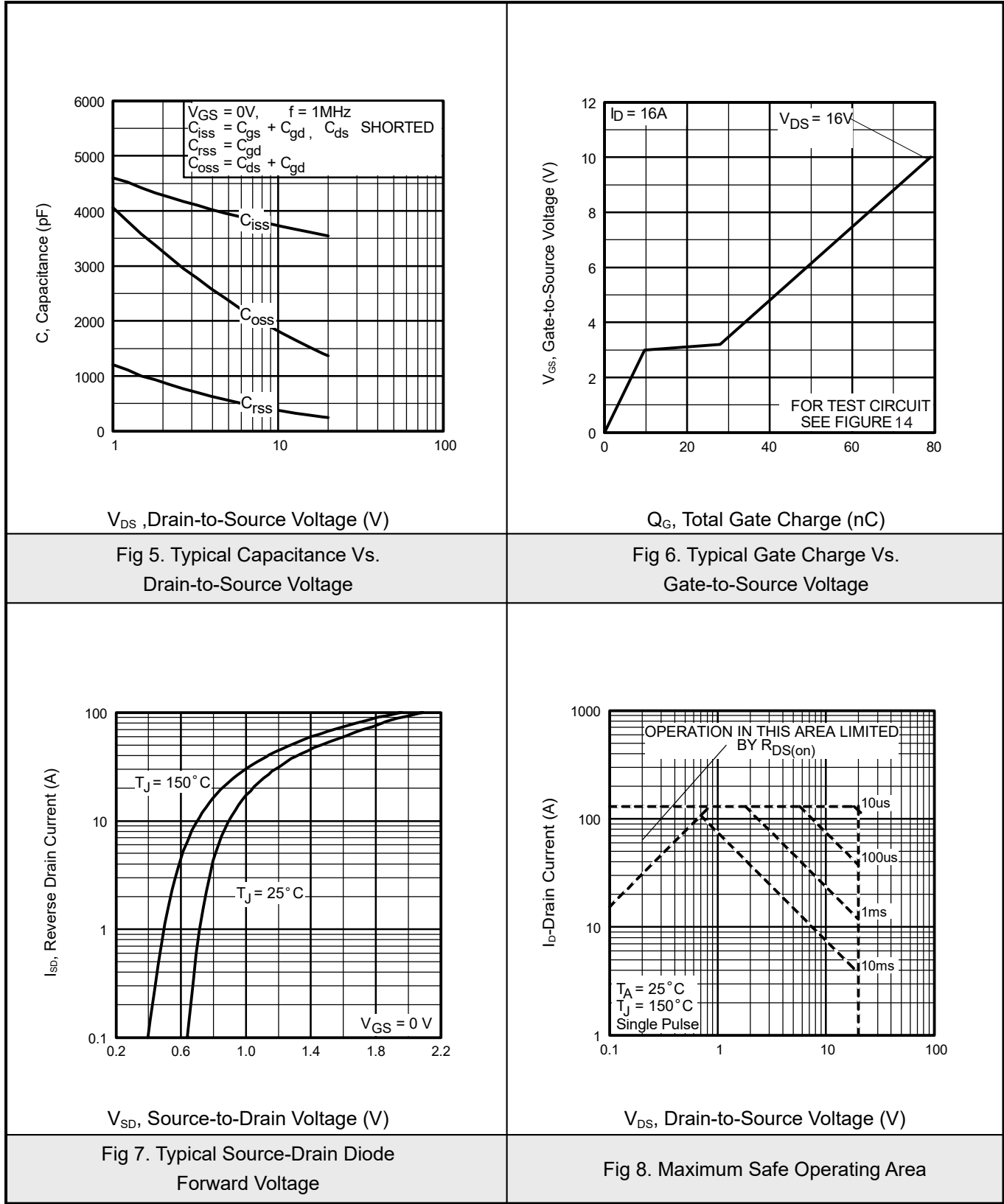


8.1Typical Characteristics



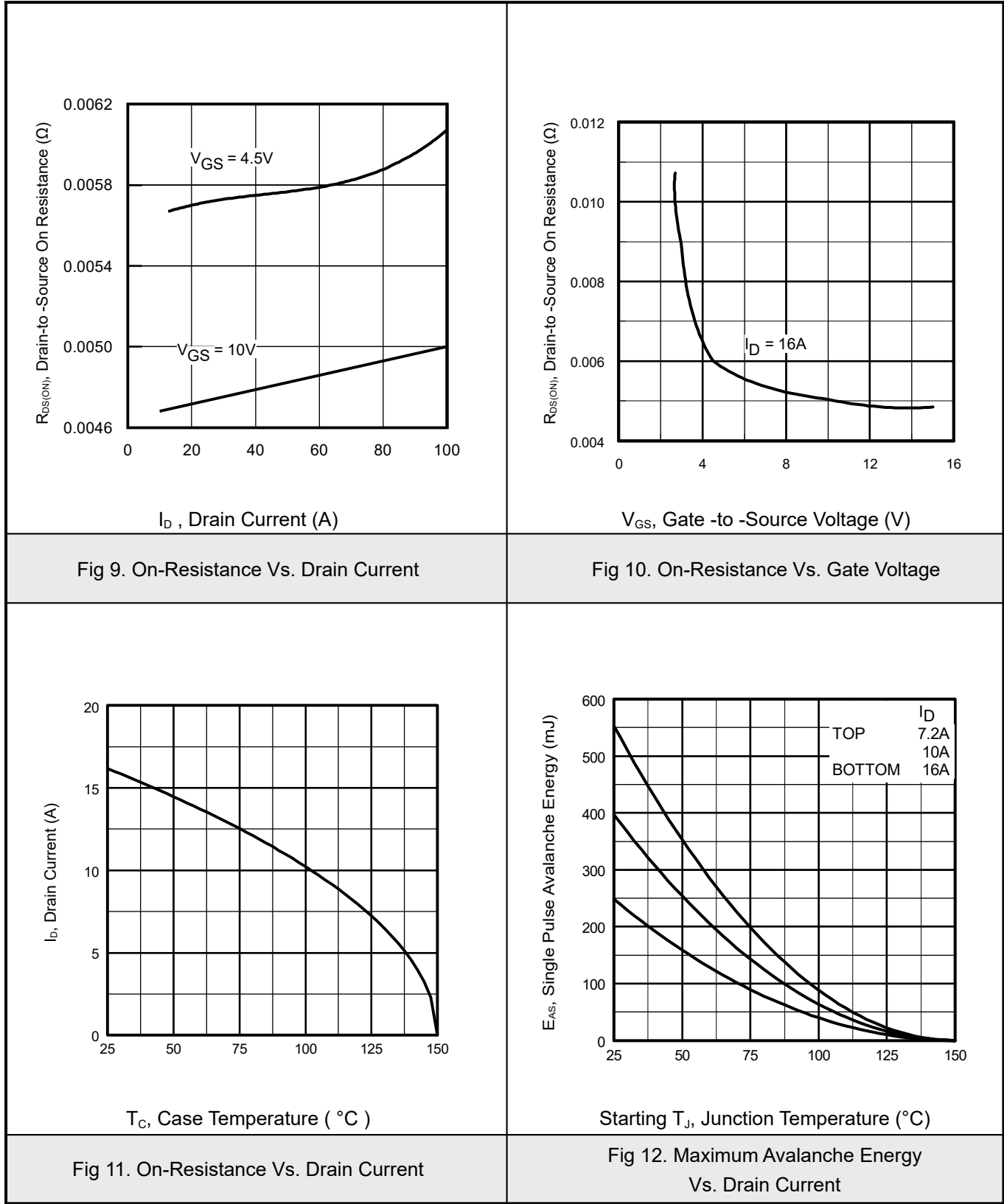


8.2Typical Characteristics



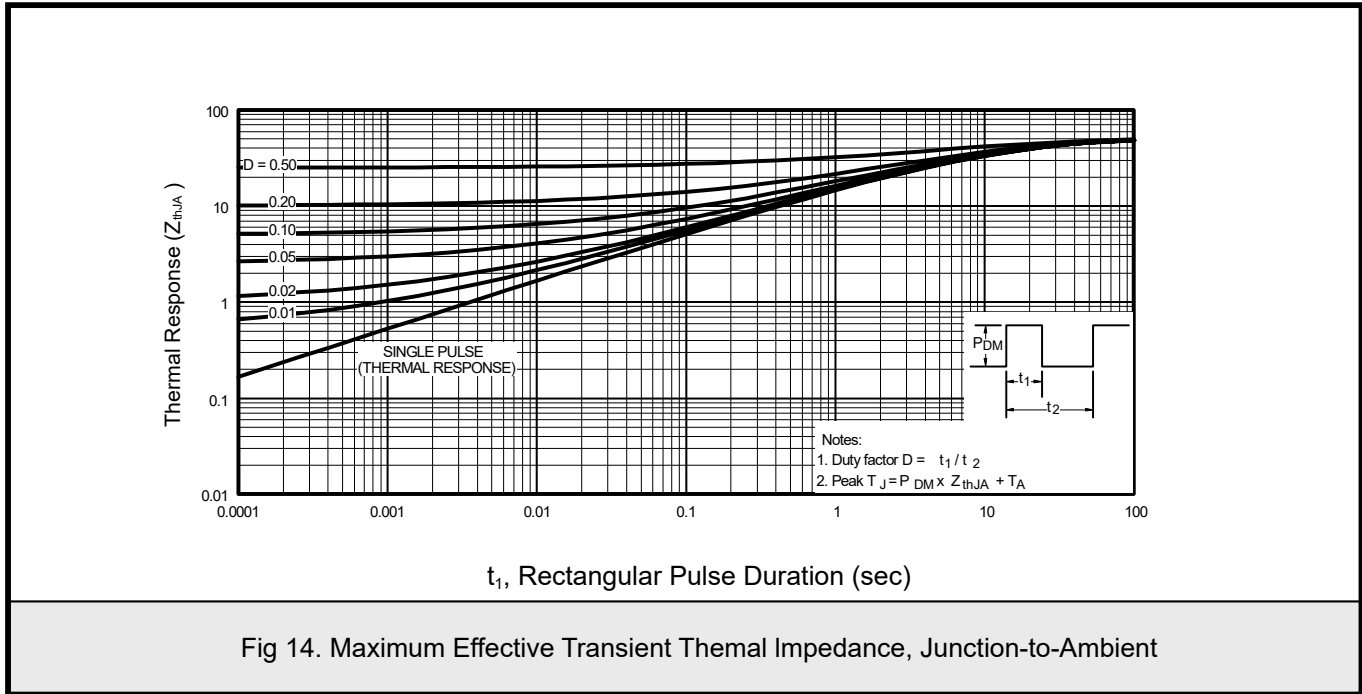


8.3Typical Characteristics





8.4Typical Characterisitics





8.5 Typical Characteristics

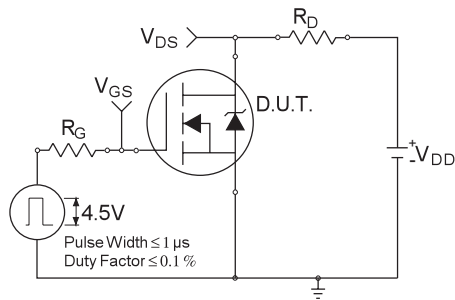


Fig 15a. Switching Time Test Circuit

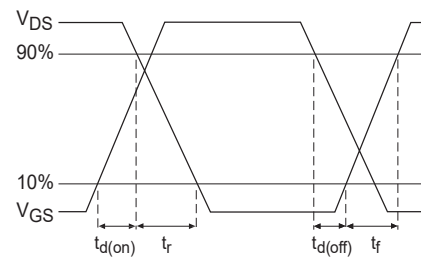


Fig 15b. Switching Time Waveforms

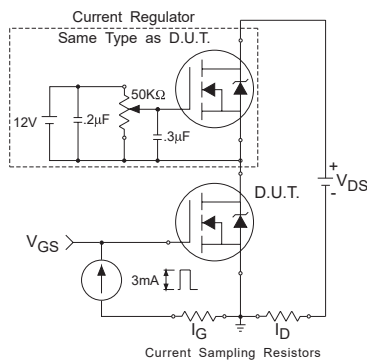


Fig 16a&b. Basic Gate Charge Test Circuit and Waveform

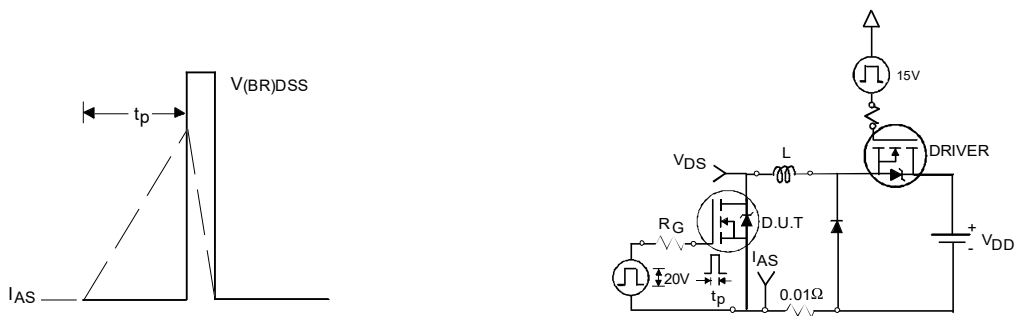
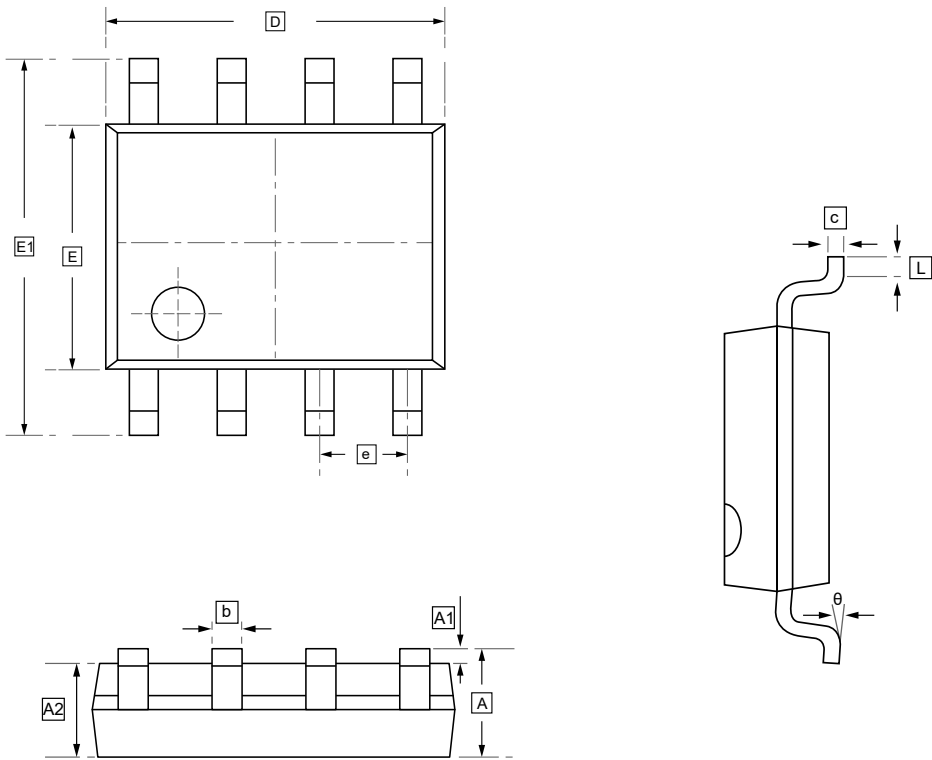


Fig 17a&b. Unclamped Inductive Test circuit and Waveforms



9.SOP-8 Package Outline Dimensions

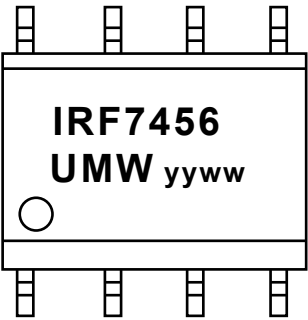


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	8°



10.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRF7456TR	SOP-8	3000	Tape and reel



11.Disclaimer

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