

1.Features

- $V_{DS(V)}=20V$
- $R_{DS(ON)}<30m\Omega(V_{GS}=4.5V)$
- $R_{DS(ON)}<35m\Omega(V_{GS}=2.5V)$

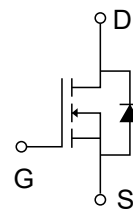
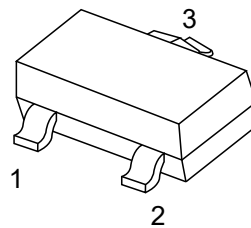
2.Benefits

- Multi-vendor compatibility
- Environmentally friendly
- Increased reliability

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23



4.Maximum ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V _{DS}	20	V
Continuous Drain Current, V _{GS} @ 10V	T _A =25°C	I _D	4.1	A
Continuous Drain Current, V _{GS} @ 10V	T _A =70°C		3.3	
Pulsed Drain Current		I _{DM}	16	
Maximum Power Dissipation	T _A =25°C	P _D	1.3	W
Maximum Power Dissipation	T _A =70°C		0.8	
Linear Derating Factor			0.01	W/°C
Gate-to-Source Voltage		V _{GS}	±12	V
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C



5.Thermal Resistance Rating

Parameter	Symbol	Typ	Max	Units
Junction-to-Ambient ③	$R_{\theta JA}$		100	°C/W
Junction-to-Ambient (t<10s) ④	$R_{\theta JA}$		99	°C/W

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 400μs; duty cycle ≤ 2%.
- ③ Surface mounted on 1 in square Cu board.



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

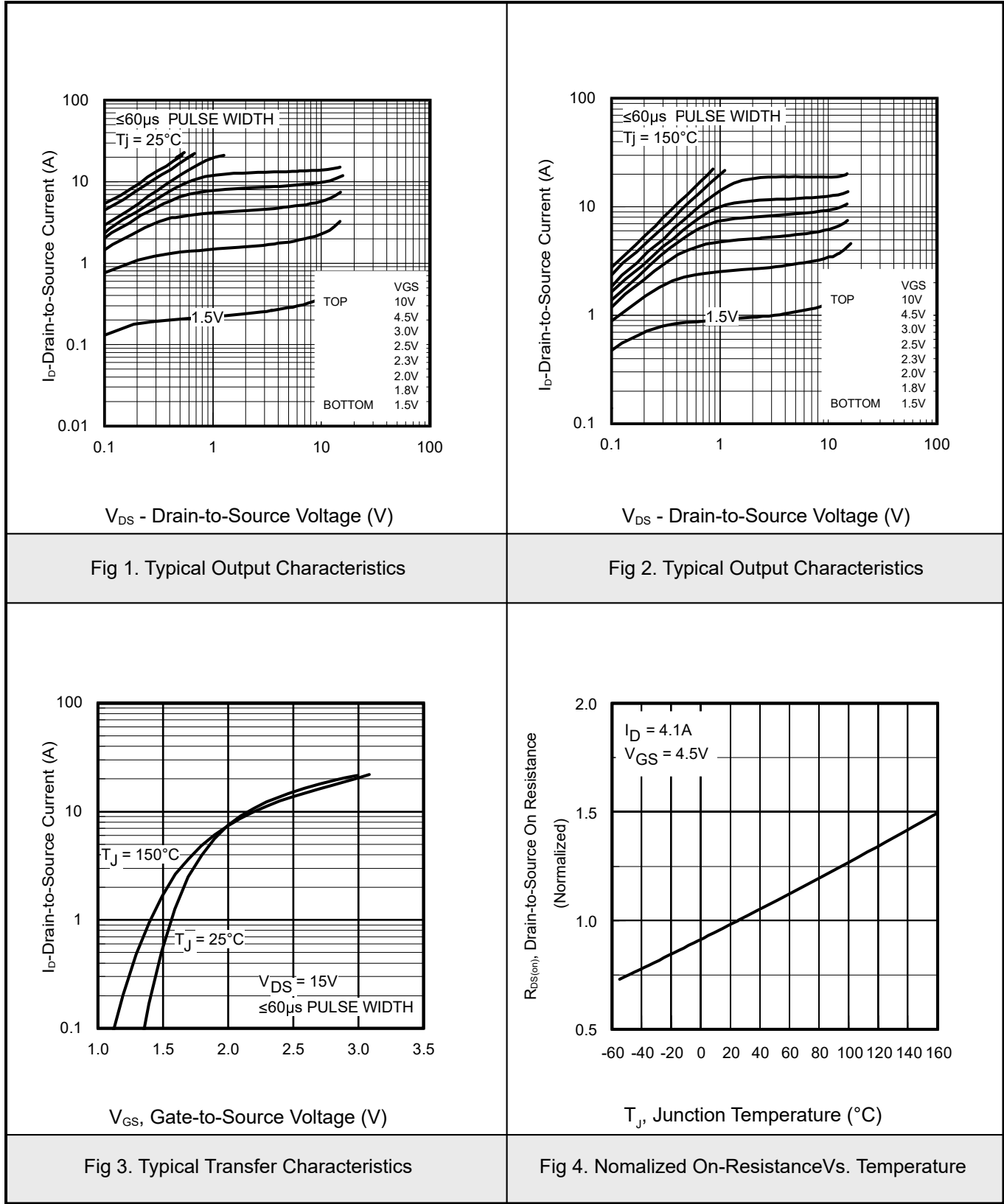
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	20			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	$I_D=1\text{mA}$, Reference to 25°C		0.03		V/ $^\circ\text{C}$
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5\text{V}$, $I_D=4.1\text{A}$ ②		25	30	m Ω
		$V_{GS}=2.5\text{V}$, $I_D=3.3\text{A}$ ②		27	35	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=5\mu\text{A}$	0.5	0.8	1.1	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=16\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=16\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$			10	
		$V_{DS}=16\text{V}$, $V_{GS}=0\text{V}$, $T_J=125^\circ\text{C}$			150	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=12\text{V}$			100	nA
Gate-to-Source Reverse Leakage		$V_{GS}=-12\text{V}$			-100	
Internal Gate Resistance	R_G			4		Ω
Forward Transconductance	g_{fs}	$V_{DS}=10\text{V}$, $I_D=4.1\text{A}$	10			S
Total Gate Charge	Q_g	$V_{DS}=10\text{V}$		3.5		nC
Gate-to-Source Charge	Q_{gs}	$V_{GS}=4.5\text{V}$ ②		0.26		
Gate-to-Drain ("Miller") Charge	Q_{gd}	$I_D=4.1\text{A}$		1.7		
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=10\text{V}$ ②		3.6		ns
Rise Time	t_r	$I_D=1\text{A}$		4.9		
Turn-Off Delay Time	$t_{D(off)}$	$R_G=6.8\Omega$		11		
Fall Time	t_f	$V_{GS}=4.5\text{V}$		6		
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$		290		pF
Output Capacitance	C_{oss}	$V_{DS}=16\text{V}$		64		
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		41		



Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			1.3	A
Pulsed Source Current (Body Diode) ①	I_{SM}				16	
Diode Forward Voltage	V_{SD}		$T_J=25^{\circ}\text{C}, I_S=4.1\text{A}, V_{GS}=0\text{V}$ ②		1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}, V_R=15\text{V}, I_F=1.3\text{A}$		8.6	13	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100\text{A}/\mu\text{s}$ ②		2.8	4.2	nC

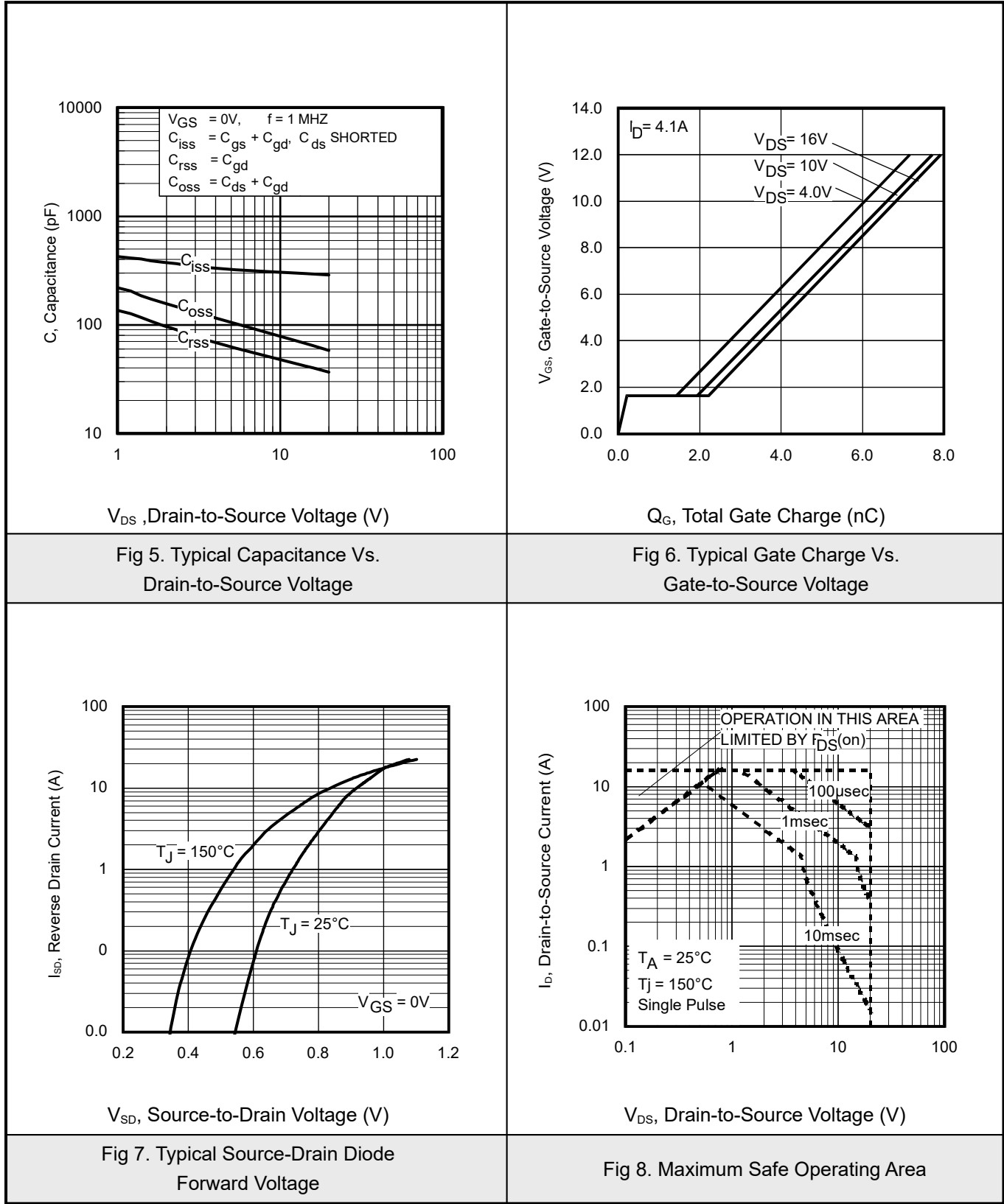


7.1Typical Characteristics



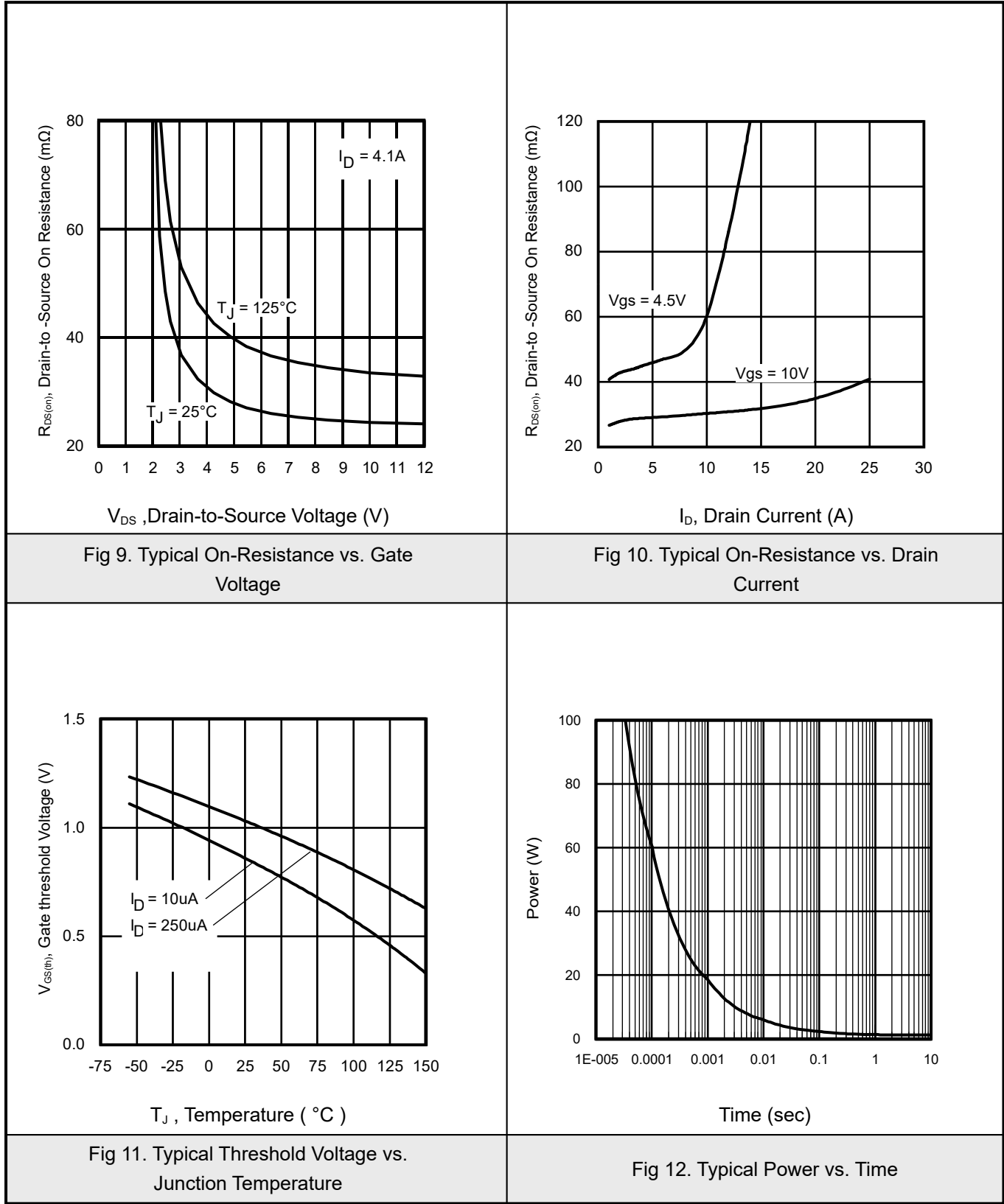


7.2Typical Characteristics





7.3Typical Characteristics





7.4Typical Characterisitics

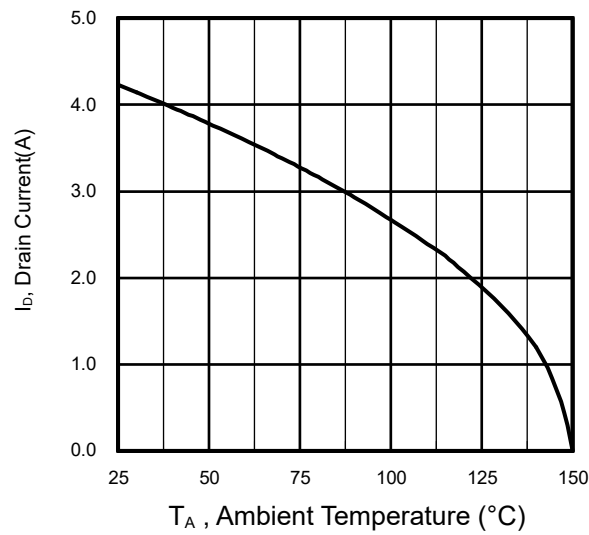


Fig 13. Maximum Drain Current vs. Ambient Temperature

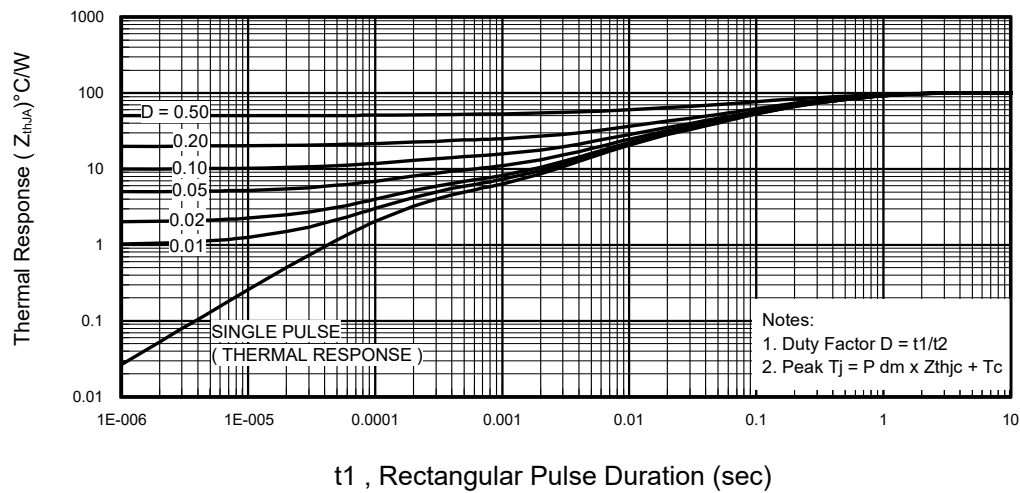


Fig 14. Typical Effective Transient Thermal Impedance, Junction-to-Ambient



7.5 Typical Characteristics

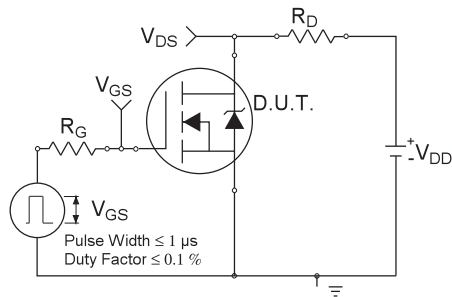


Fig 15a. Switching Time Test Circuit

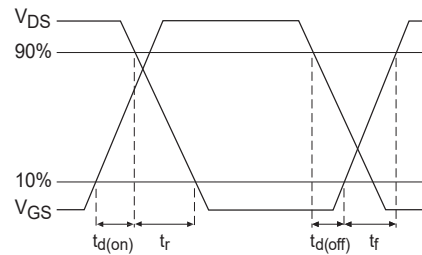


Fig 15b. Switching Time Waveforms

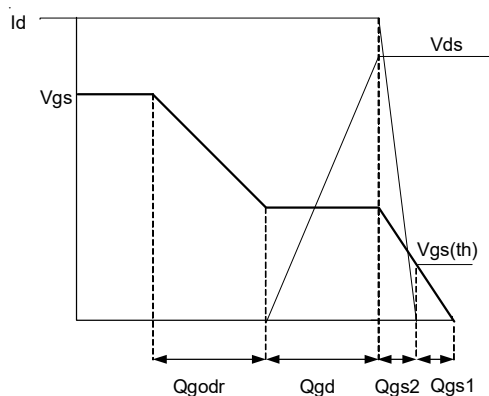


Fig 16a. Basic Gate Charge Waveform

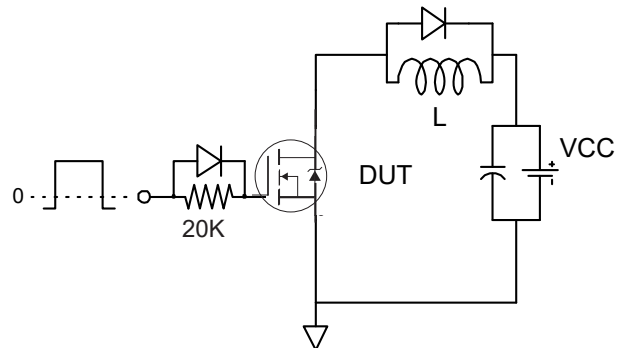
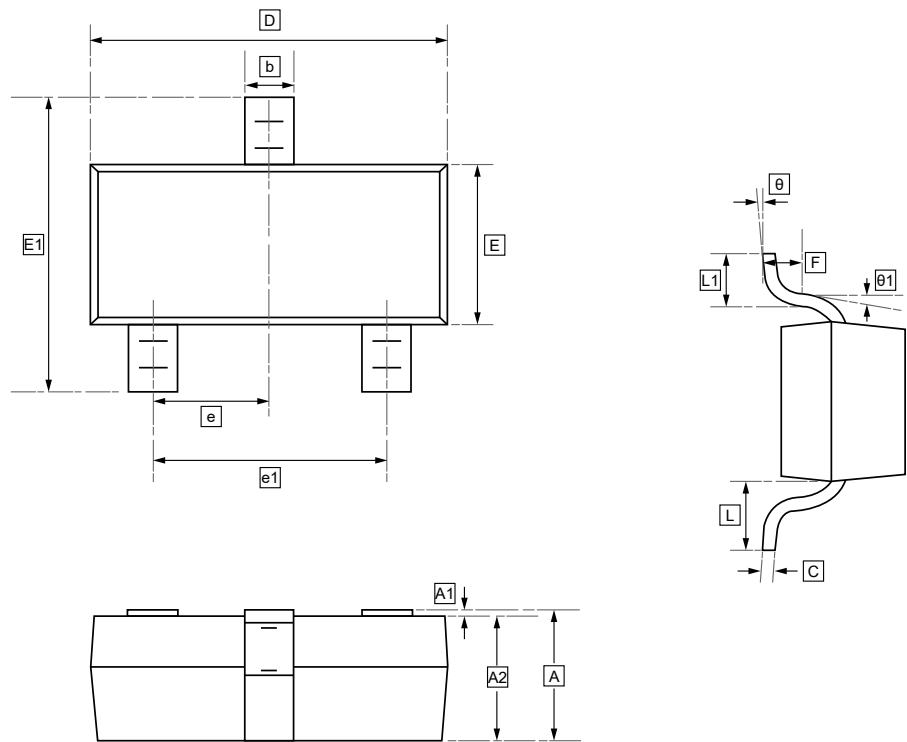


Fig 16b. Gate Charge Test Circuit



8.SOT-23 Package Outline Dimensions



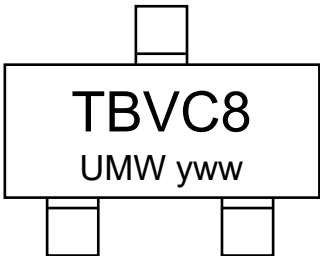
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	C	D	E	E1	e	e1	L	L1
Min	0.90	0.00	0.90	0.30	0.08	2.80	1.20	2.25	0.95	1.80	0.55	0.30
Max	1.15	0.10	1.05	0.50	0.15	3.00	1.40	2.55	TYP.	2.00	REF	0.50

Symbol	F	θ	θ1
Min	0.25	0°	2°
Max		8°	12°



9.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRLML6246TR	SOT-23	3000	Tape and reel



10.Disclaimer

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