

1.Description

The IRLML5203TR uses advanced trench technology to provide excellent $R_{DS(on)}$ with low gate charge. This device is suitable for use as a loadswitch or in PWM applications.

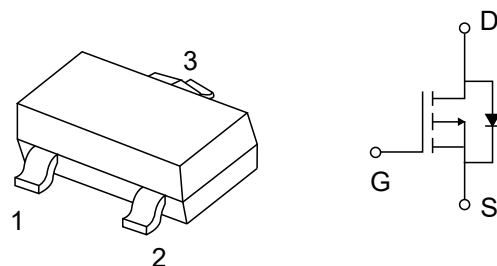
2.1Features

- $V_{DS(V)} = -30V$
- $I_D = -3A$
- $R_{DS(on)} < 85m\Omega (V_{GS} = -10V)$
- $R_{DS(on)} < 145m\Omega (V_{GS} = -4.5V)$

4.Pinning information

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

SOT-23



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-3	A
Drain Current-Pulsed	I_{DM}	-24	A
Power Dissipation	P_D	300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{STG}	-55~+150	$^\circ C$



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

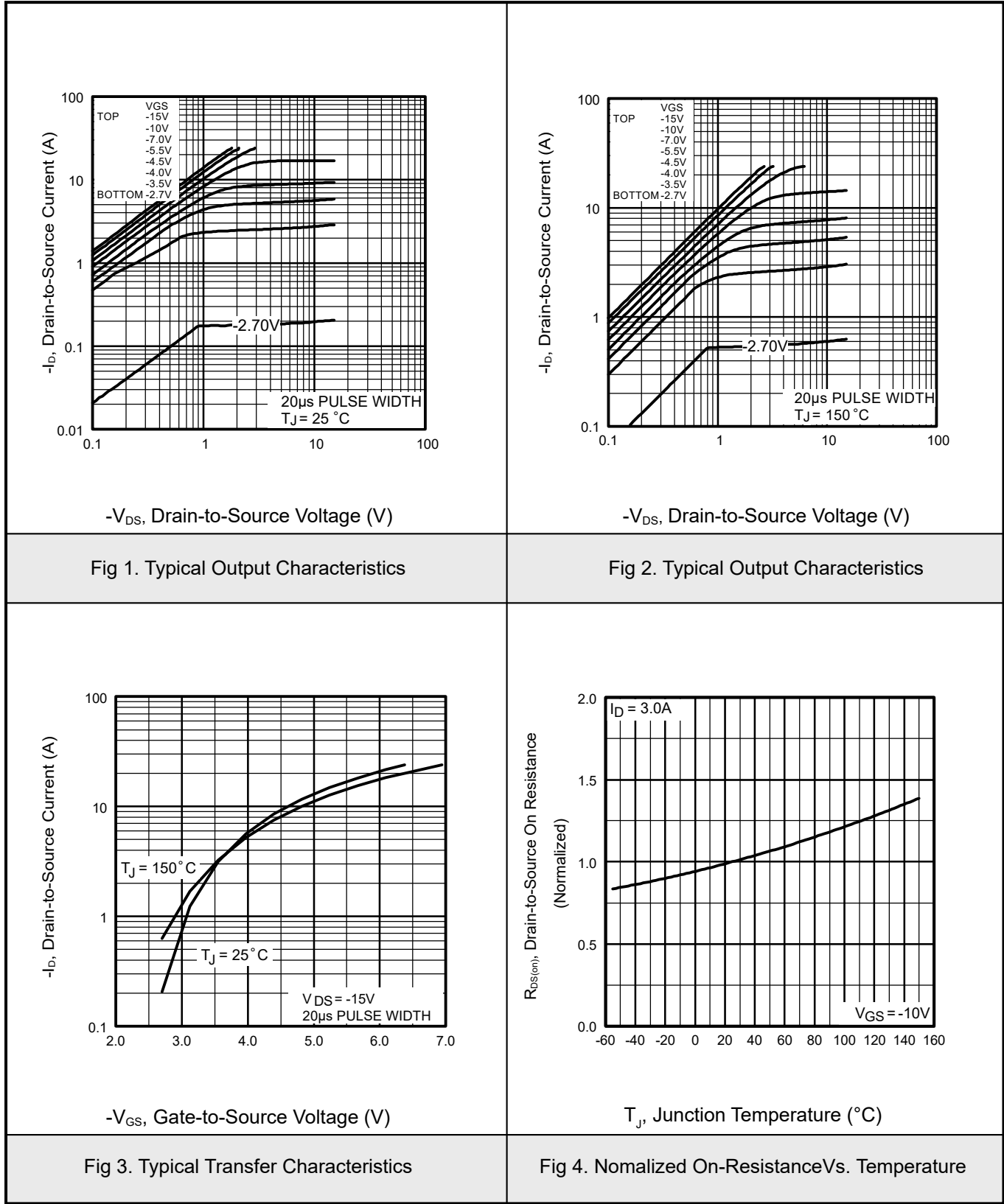
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=-250\mu A, V_{GS}=0V$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA
Gate -source leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Drain-source on-resistance (note 1)	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4.1A$			85	m Ω
		$V_{GS}=-4.5V, I_D=-3A$			145	m Ω
Forward tranconductance (note 1)	g_{fs}	$V_{DS}=-5V, I_D=-4A$	5.5			S
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-3	V
Diode forward voltage (note 1)	V_{SD}	$I_S=-1A, V_{GS}=0V$			-1	V
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V, f=1MHz$		700		pF
Output capacitance	C_{oss}			120		pF
Reverse transfer capacitance	C_{rss}			75		pF
Switching characteristics (note 2)						
Turn-on delay time	$t_{D(on)}$	$V_{GS}=-10V, V_{DS}=-15V$ $R_L=3.6\Omega, R_{GEN}=3\Omega$		8.6		ns
Turn-on rise time	t_r			5		ns
Turn-off delay time	$t_{D(off)}$			28.2		ns
Turn-off fall time	t_f			13.5		ns

Notes:

1. Pulse test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
2. These parameter have no way to verify.

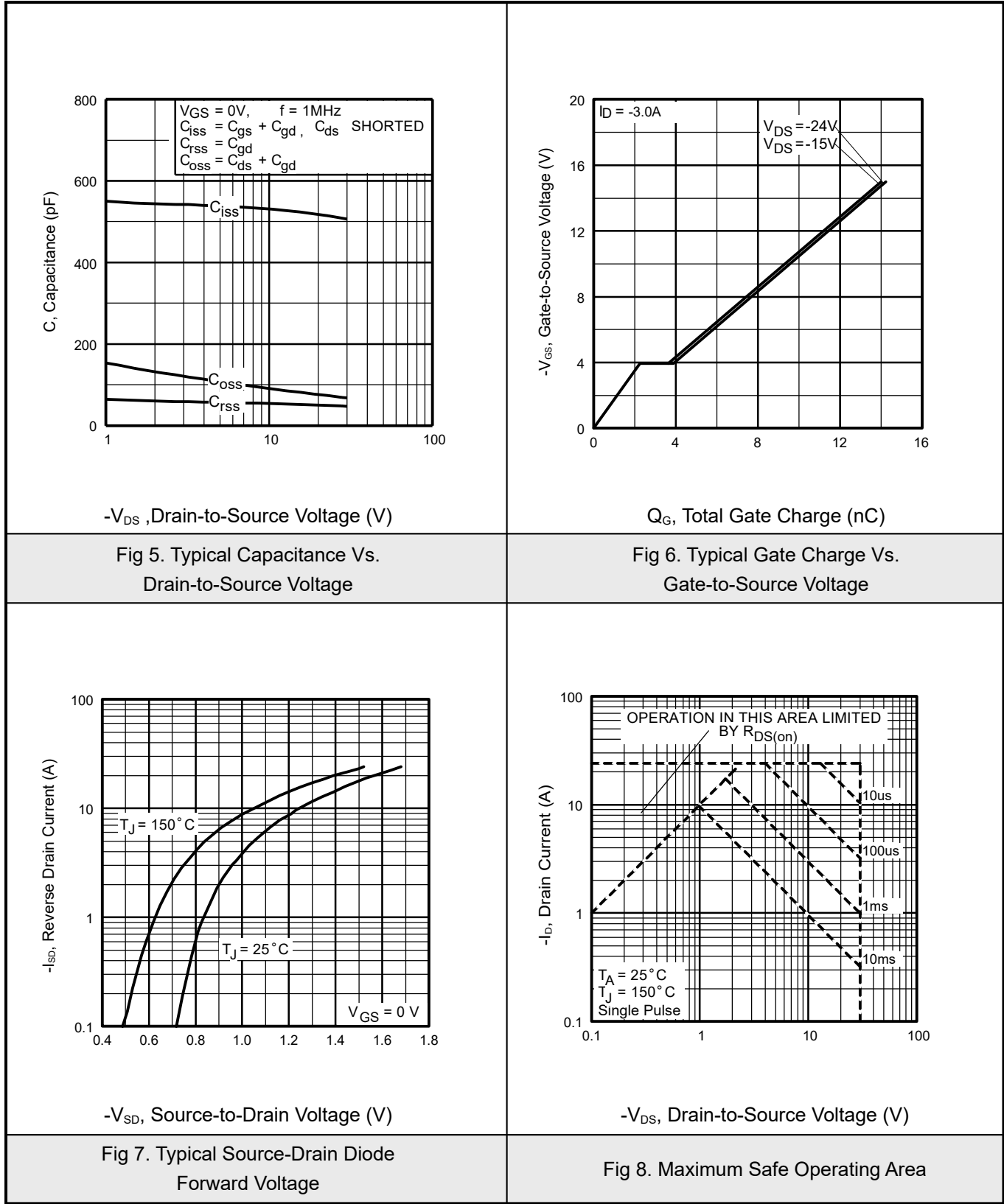


8.1Typical Characteristics





8.2Typical Characterisitics



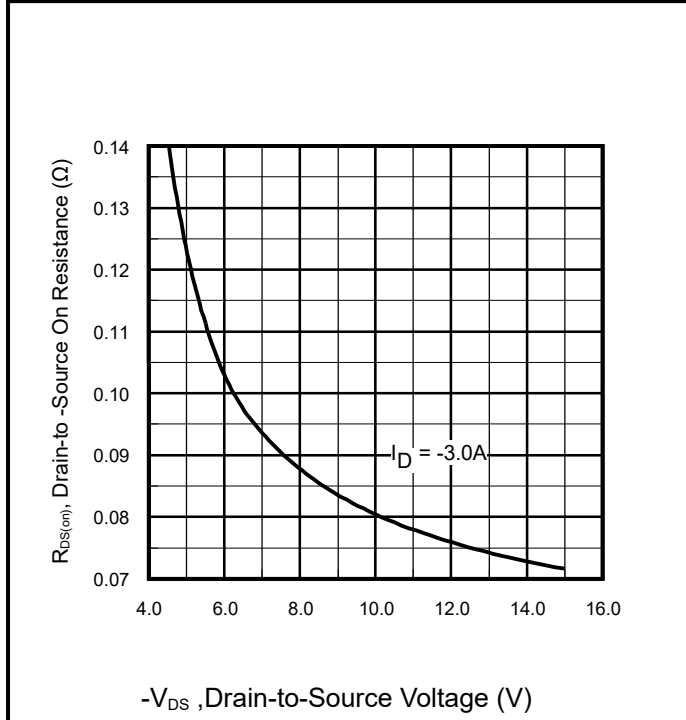


Fig 9. Typical On-Resistance vs. Gate Voltage

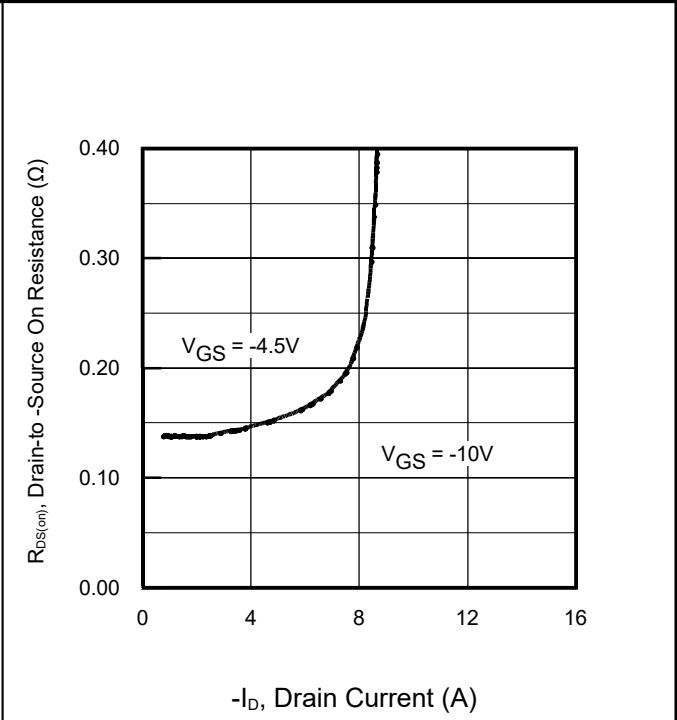


Fig 10. Typical On-Resistance vs. Drain Current

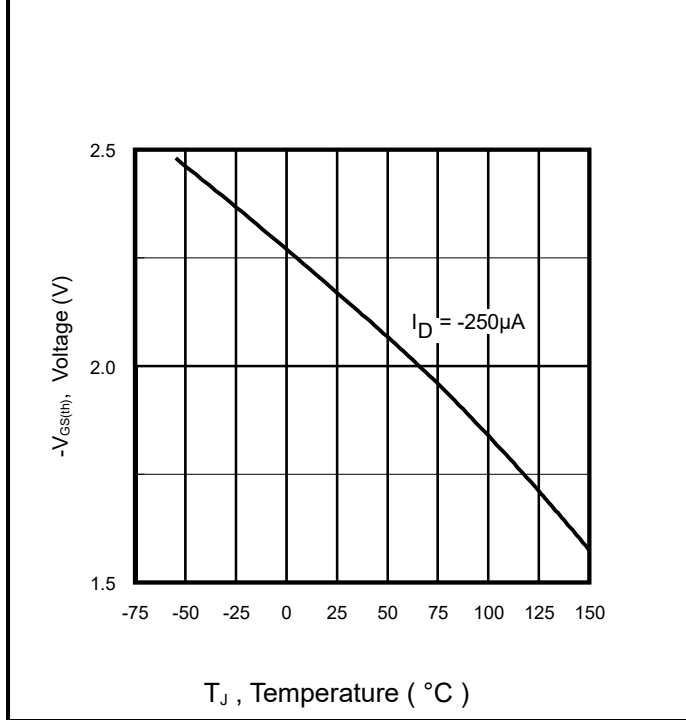


Fig 11. Typical Threshold Voltage vs. Junction Temperature

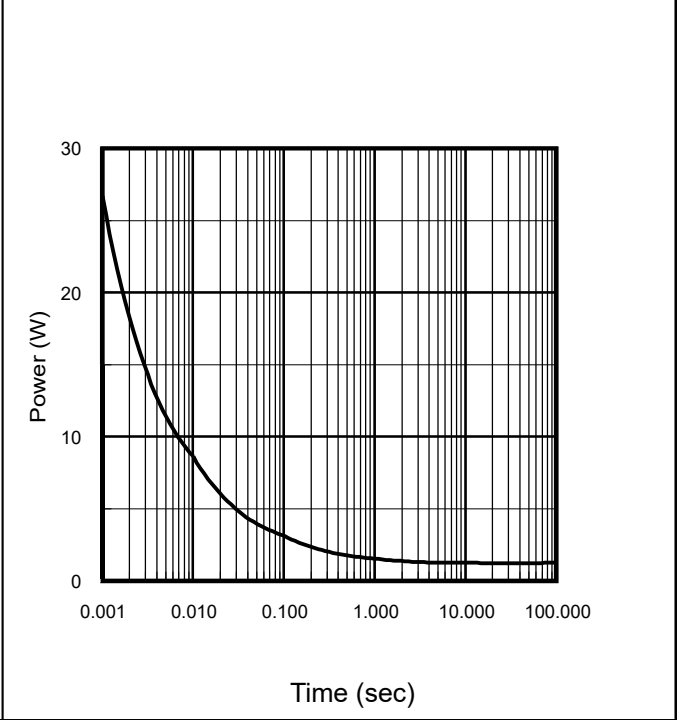


Fig 12. Typical Power vs. Time



8.3Typical Characterisitics

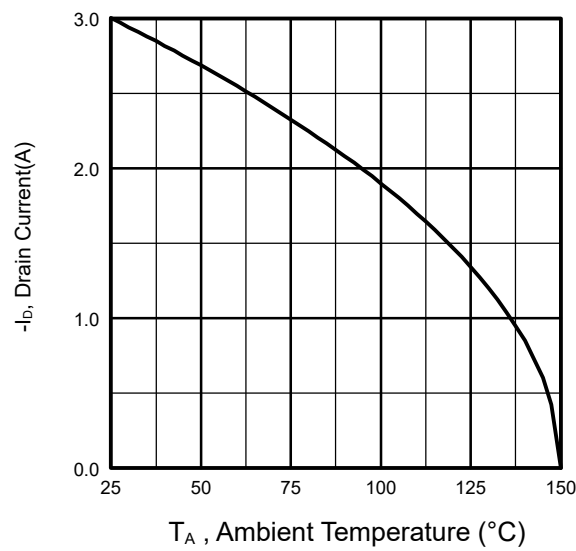


Fig 13. Maximum Drain Current vs. Ambient Temperature

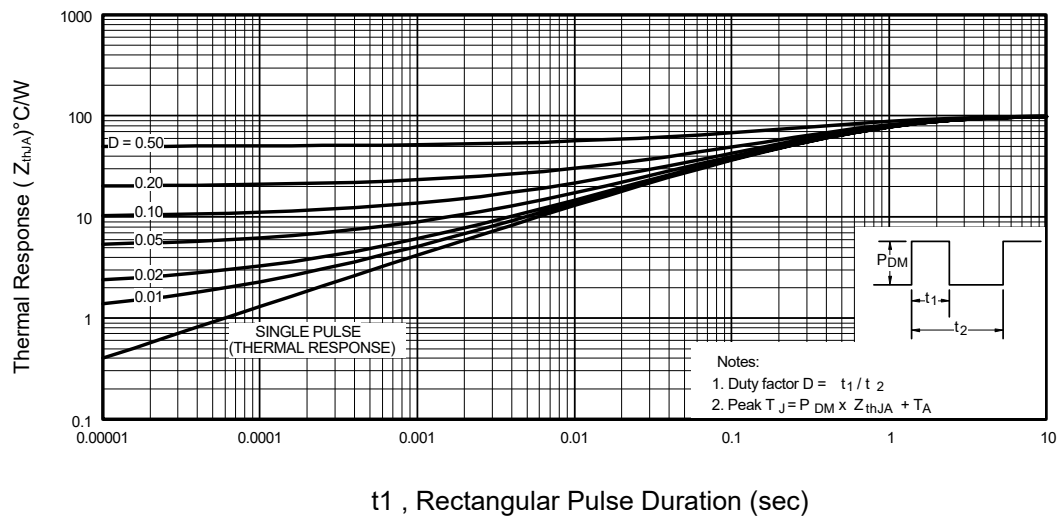


Fig 14. Typical Effective Transient Thermal Impedance, Junction-to-Ambient



8.4Typical Characterisitics

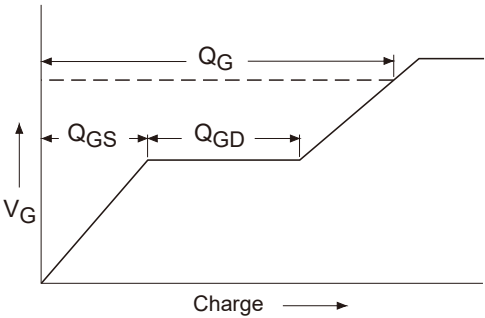


Fig 15a. Basic Gate Charge Wavefomm

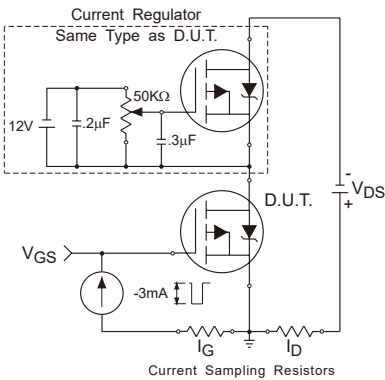


Fig 15a. Switching Time Test Circuit

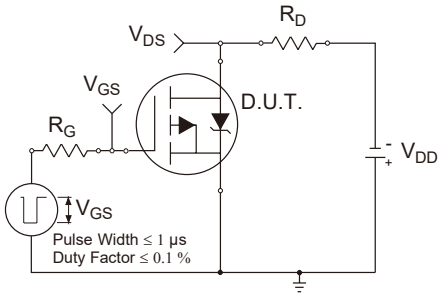


Fig 16a. Gate Charge Test Circuit

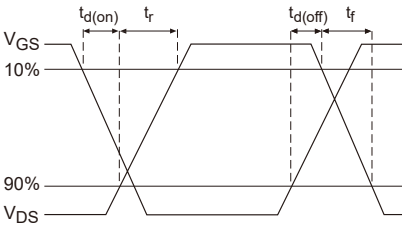
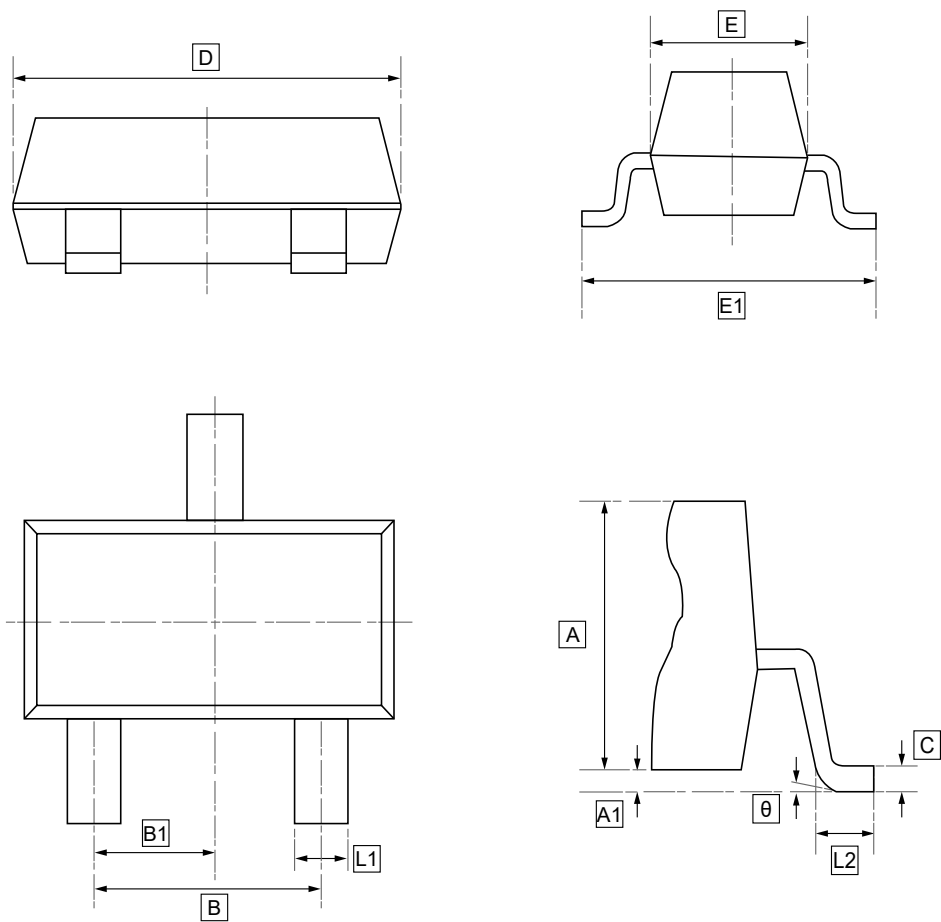


Fig 16b. Switching Time Wavefomms



9.SOT-23 Package Outline Dimensions

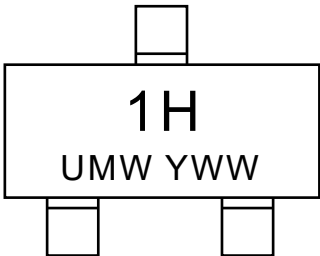


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	L1	L2	C	D	E	E1	B	B1	θ
Min	1.050	0.000	0.300	0.350	0.100	2.820	1.500	2.700	1.800	0.950	0°
Max	1.150	0.100	0.500	0.550	0.200	3.020	1.700	2.900	2.000	TYP	8°



10.Ordering information



YWW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRLML5203TR	SOT-23	3000	Tape and reel



11.Disclaimer

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