

1. Description

The UMW NTR4502PT1G uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use as a load switch or in PWM applications.

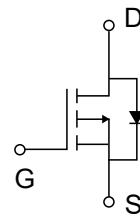
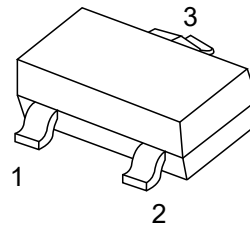
2.1 Features

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

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	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	$^\circ C$



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

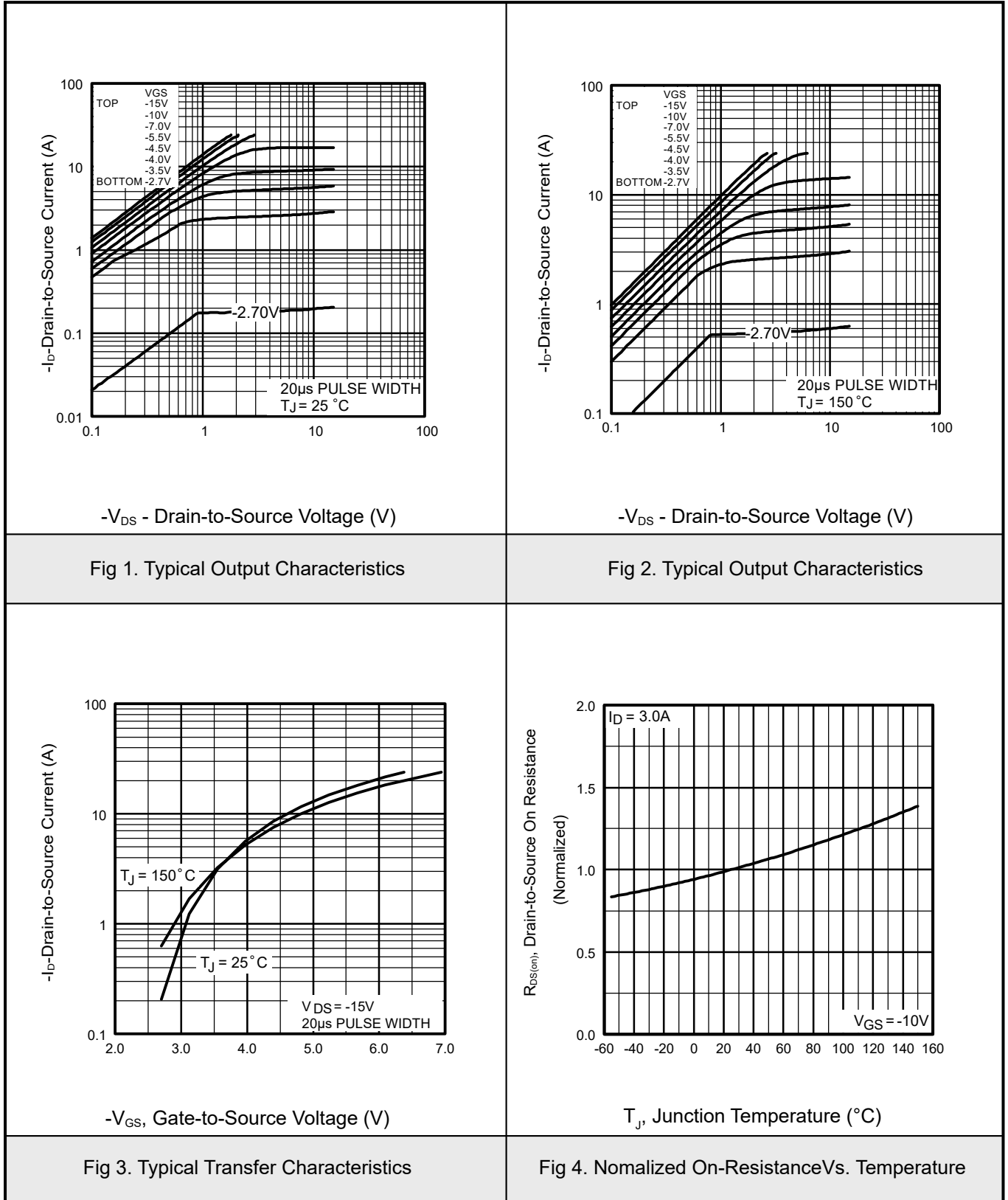
Parameter	Symbol	Conditions	Min	Typ	Max	Units	
Static characteristics							
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA	
Gate -source leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 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 transconductance (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	S	
Diode forward voltage (note 1)	V_{SD}	$I_S=-1A, V_{GS}=0V$			-1	V	
Dynamic characteristics (note 2)							
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		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 $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. These parameter have no way to verify.

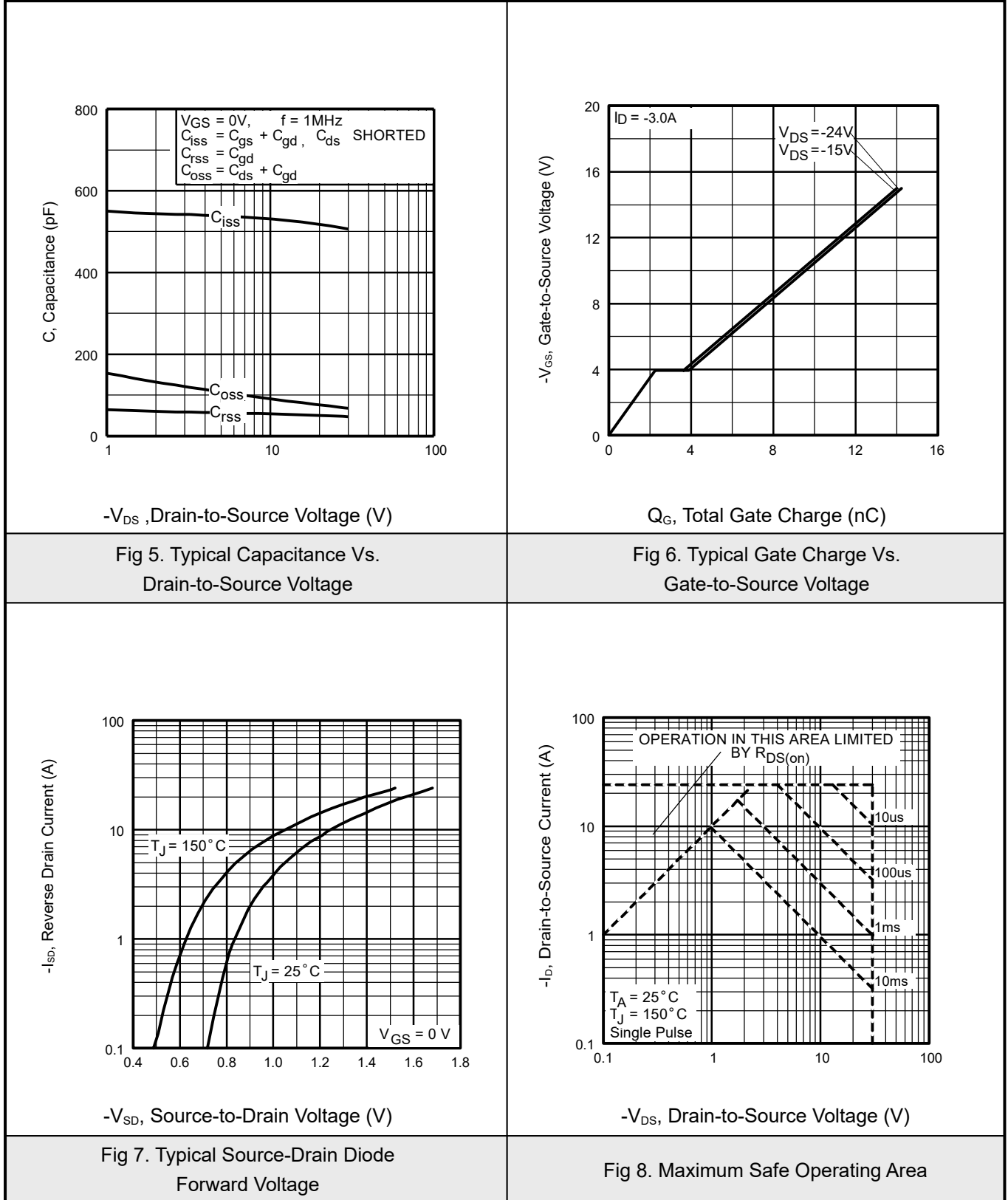


6.1 Typical Characteristics



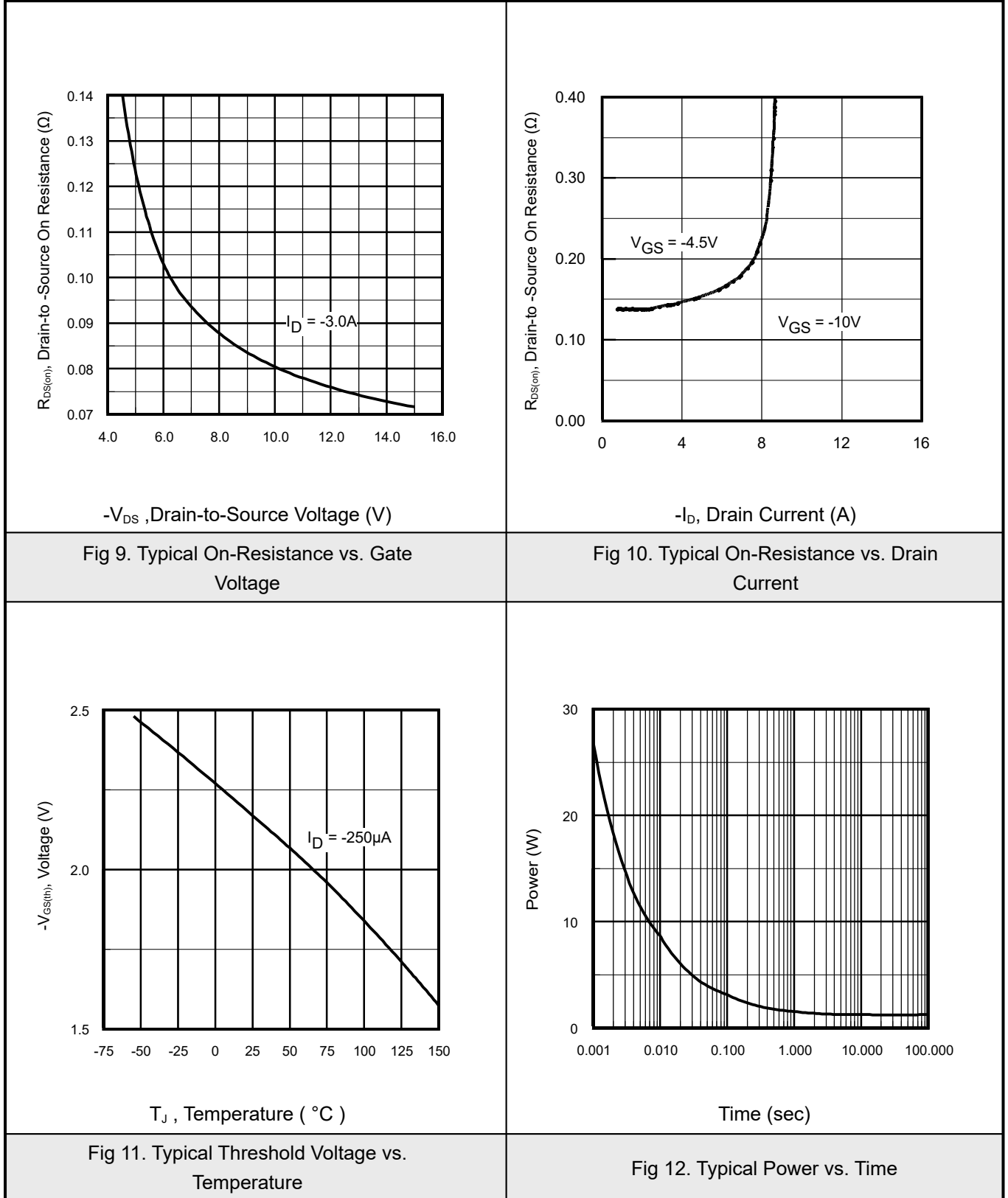


6.2 Typical Characteristics





6.3 Typical Characteristics





6.4 Typical Characteristics

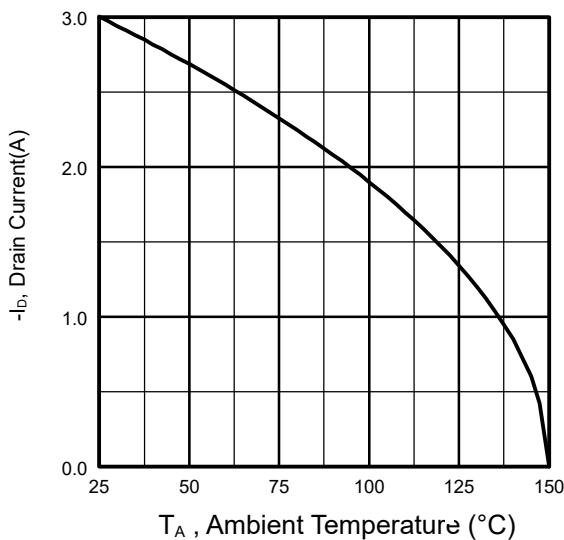


Fig 13. Maximum Drain Current vs. Ambient Temperature

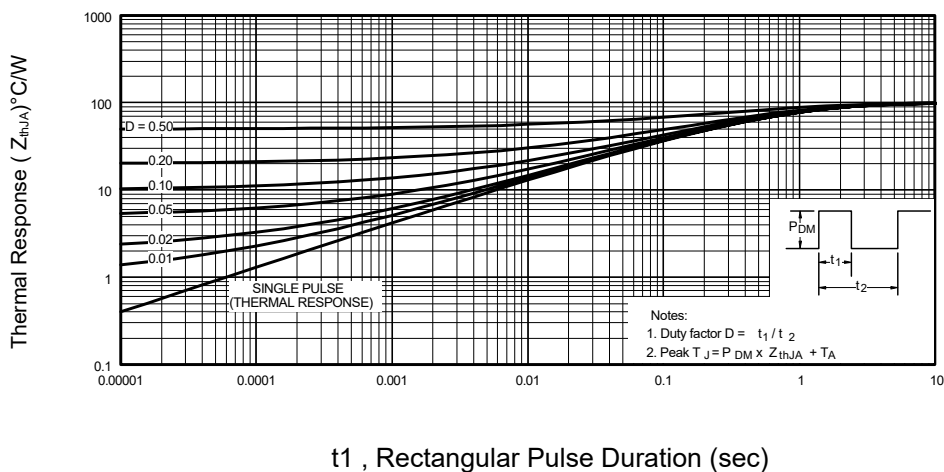


Fig 14. Typical Effective Transient Thermal Impedance, Junction-to-Ambient



6.5 Typical Characteristics

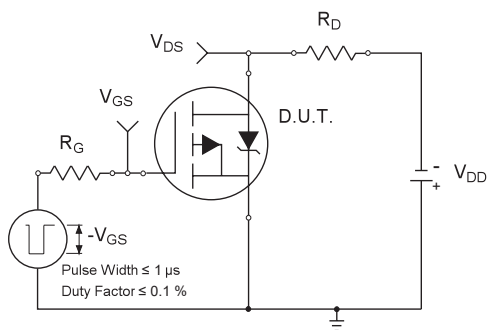


Fig 15a. Switching Time Test Circuit

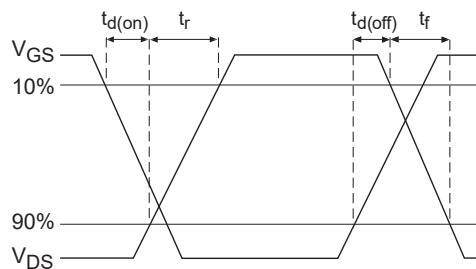


Fig 15b. Switching Time Waveforms

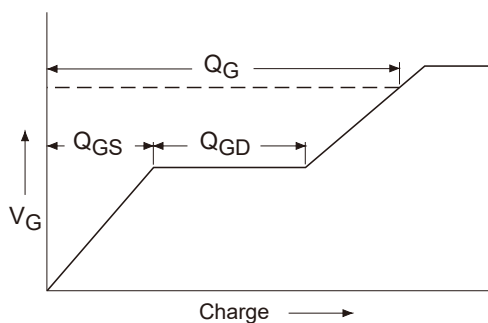


Fig 16a. Basic Gate Charge Waveform

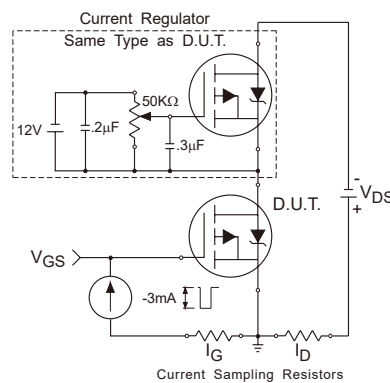
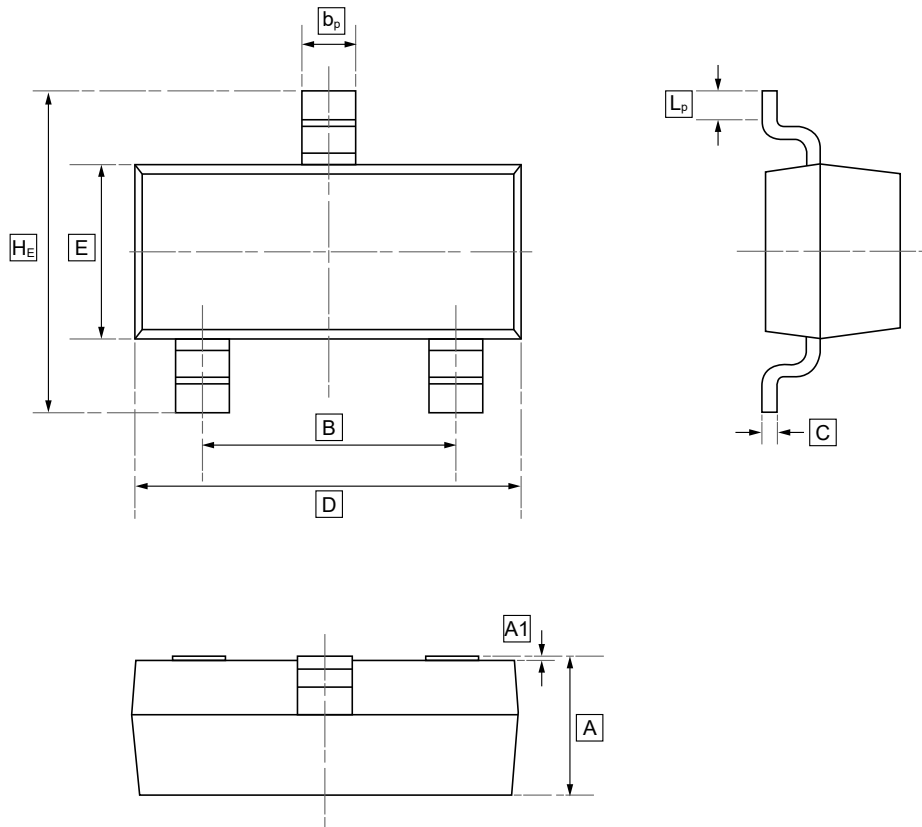


Fig 16b. Gate Charge Test Circuit



7.SOT-23 Package Outline Dimensions

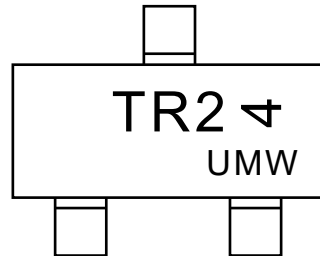


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b _p	C	D	E	H _E	A1	L _p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



8. Ordering information



Order Code	Package	Base QTY	Delivery Mode
UMW NTR4502PT1G	SOT-23	3000	Tape and reel



9. Disclaimer

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