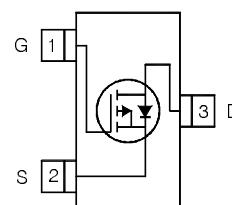
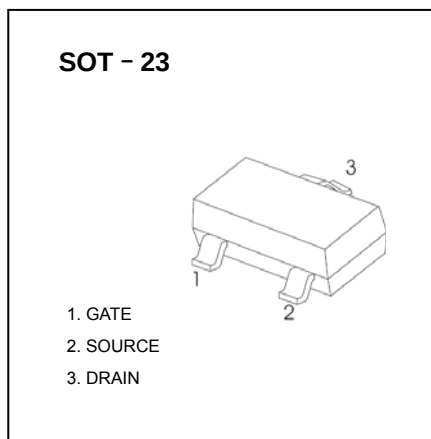


Features

- $V_{DS} (V) = -20V$
- $R_{DS(ON)} < 90m\Omega$ ($V_{GS} = 4.5V$)
- $R_{DS(ON)} < 110m\Omega$ ($V_{GS} = -2.7V$)
- P-Channel MOSFET
- SOT-23 Footprint
- Available in Tape and Reel Fast
- Switching
- Lead-Free



Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-0.78	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-0.62	
I_{DM}	Pulsed Drain Current ①	-4.9	
$P_D @ T_A = 25^\circ C$	Power Dissipation	540	mW
	Linear Derating Factor	4.3	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
dv/dt	Peak Diode Recovery dv/dt ②	-5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

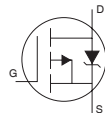
Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ④		230	°C/W

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-20			V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		-4.9		mV/°C	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance			90	mΩ	$V_{GS} = -4.5V, I_D = -0.61A$ ③
				110		$V_{GS} = -2.7V, I_D = -0.31A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-0.70		-1.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	0.56			S	$V_{DS} = -10V, I_D = -0.31A$
I_{DSS}	Drain-to-Source Leakage Current			-1.0	μA	$V_{DS} = -16V, V_{GS} = 0V$
				-25		$V_{DS} = -16V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			-100	nA	$V_{GS} = -12V$
	Gate-to-Source Reverse Leakage			100		$V_{GS} = 12V$
Q_g	Total Gate Charge		2.4	3.6	nC	$I_D = -0.61A$
Q_{gs}	Gate-to-Source Charge		0.56	0.84		$V_{DS} = -16V$
Q_{gd}	Gate-to-Drain ("Miller") Charge		1.0	1.5		$V_{GS} = -4.5V$, See Fig. 6 and 9 ③
$t_{d(on)}$	Turn-On Delay Time		13		ns	$V_{DD} = -10V$
t_r	Rise Time		18			$I_D = -0.61A$
$t_{d(off)}$	Turn-Off Delay Time		22			$R_G = 6.2\Omega$
t_f	Fall Time		22			$R_D = 16\Omega$, See Fig. 10 ③
C_{iss}	Input Capacitance		97		pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance		53			$V_{DS} = -15V$
C_{rss}	Reverse Transfer Capacitance		28			$f = 1.0\text{MHz}$, See Fig. 5

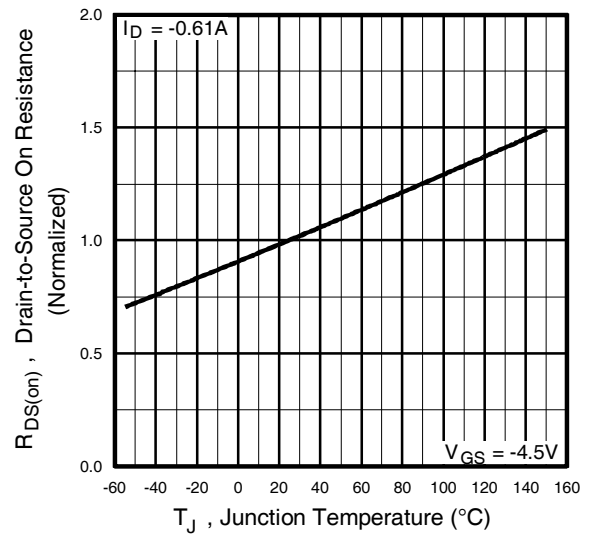
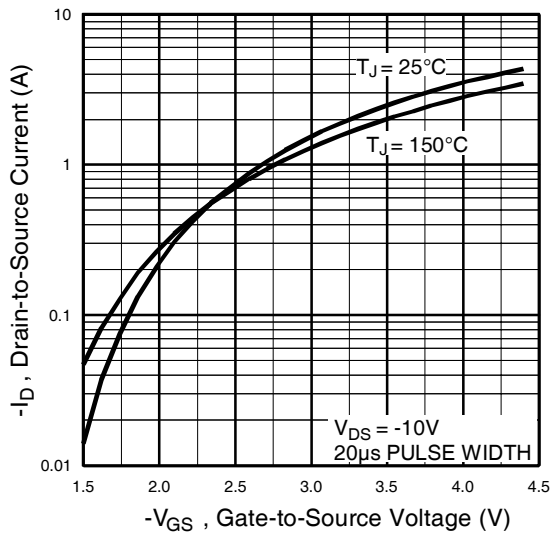
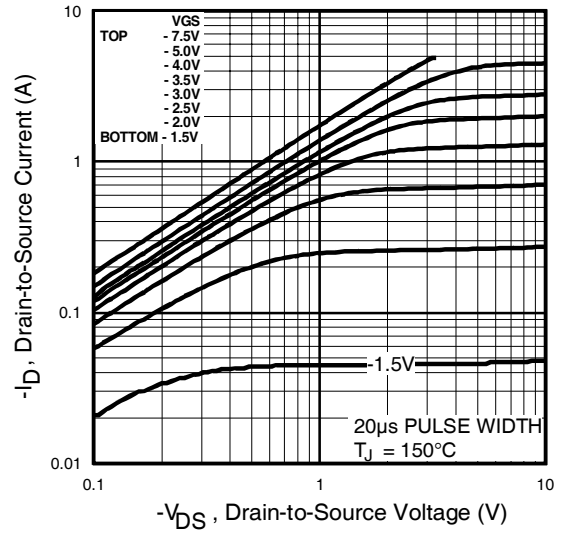
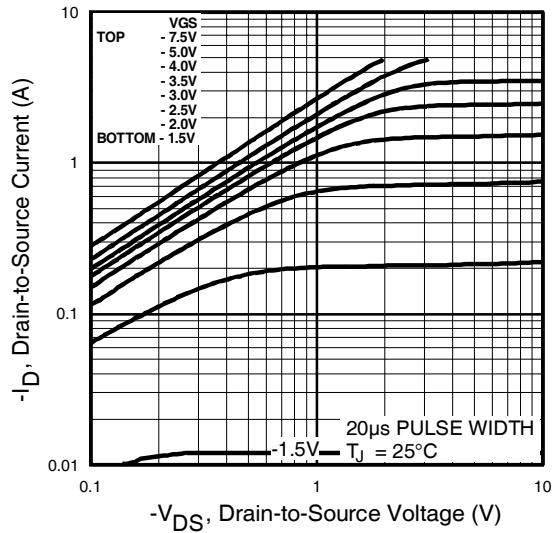
Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)			-0.54	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①			-4.9		
V_{SD}	Diode Forward Voltage			-1.2	V	$T_J = 25^\circ\text{C}, I_S = -0.61A, V_{GS} = 0V$ ④
t_{rr}	Reverse Recovery Time		35	53	ns	$T_J = 25^\circ\text{C}, I_F = -0.61A$
Q_{rr}	Reverse Recovery Charge		26	39	nC	$di/dt = -100A/\mu s$ ④

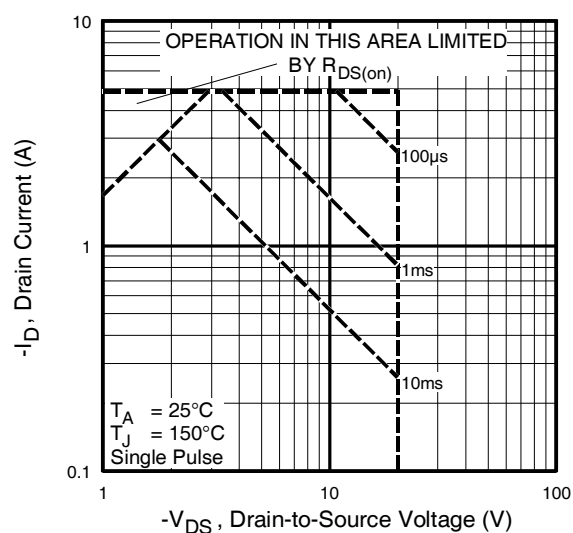
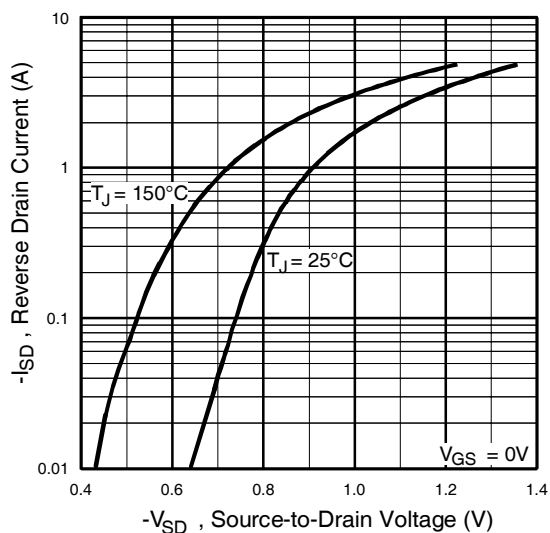
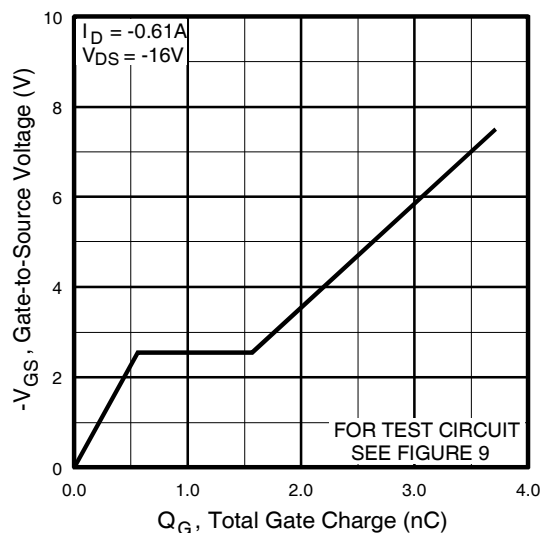
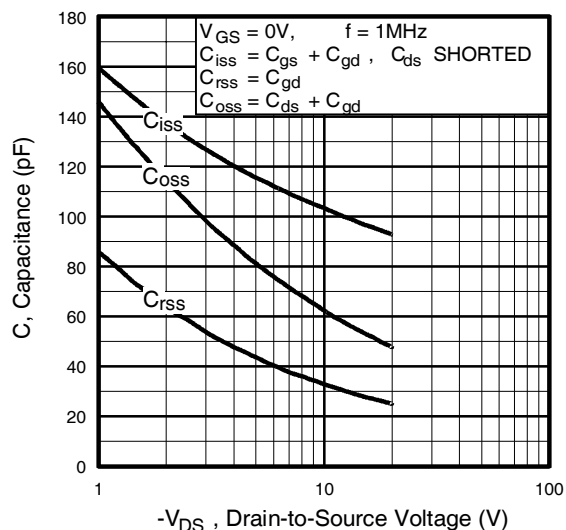
Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② $I_{SD} \leq -0.61A$, $di/dt \leq 76A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- ④ Surface mounted on FR-4 board, $t \leq 5\text{sec}$.

Typical Electrical Characteristics



Typical Electrical Characteristics



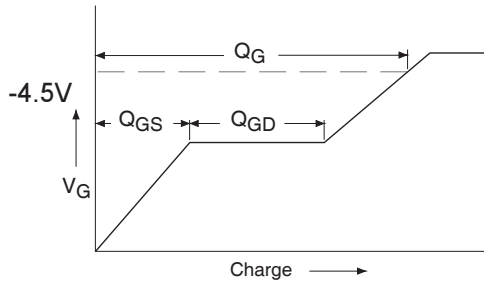


Fig 9a. Basic Gate Charge Waveform

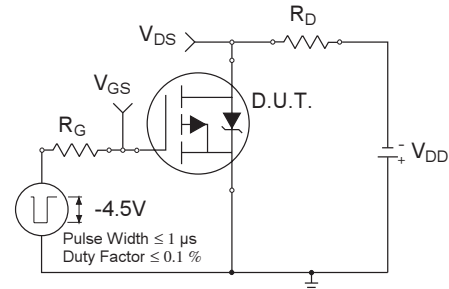


Fig 10a. Switching Time Test Circuit

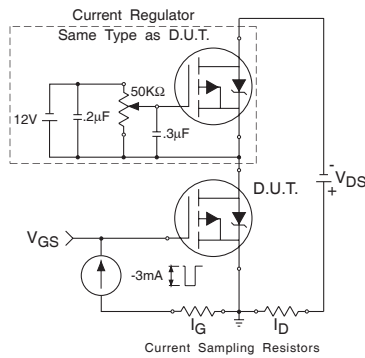


Fig 9b. Gate Charge Test Circuit

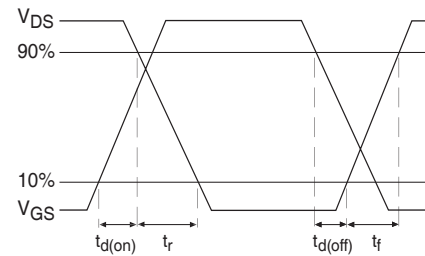


Fig 10b. Switching Time Waveforms

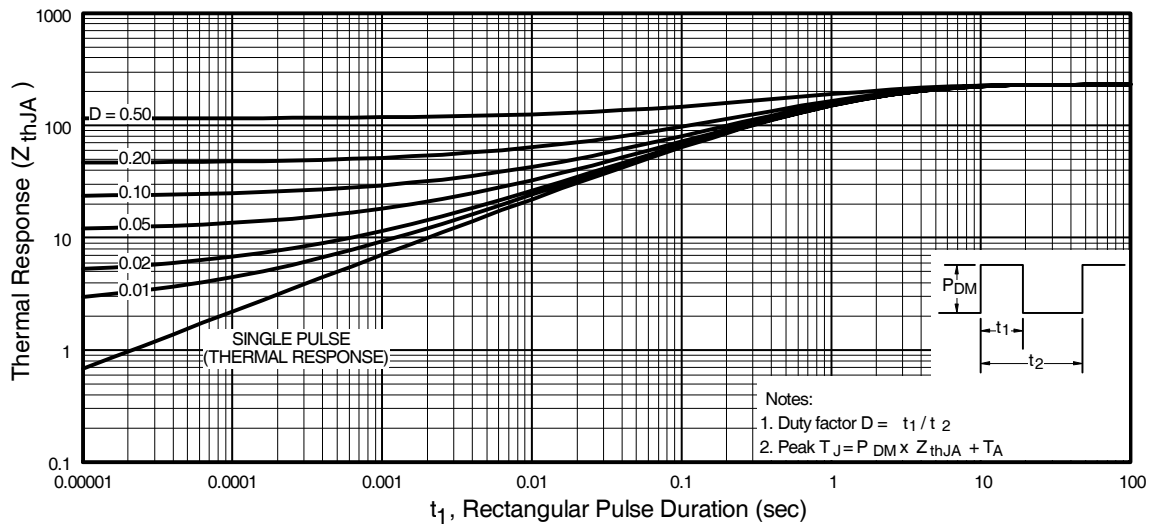
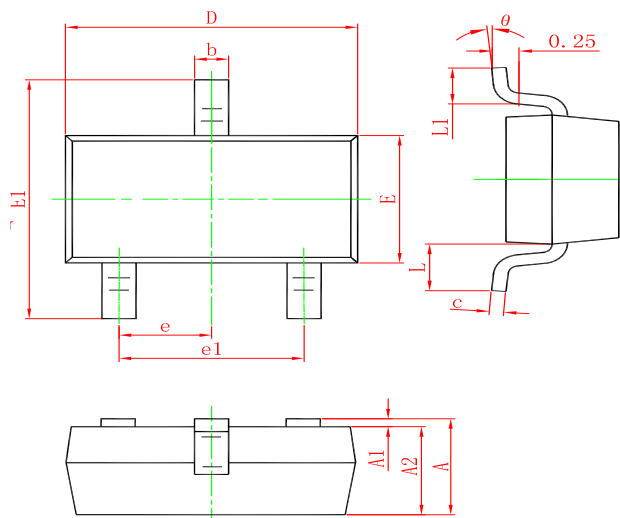


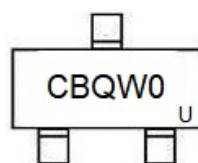
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW IRLML6302TR	SOT-23	3000	Tape and reel