

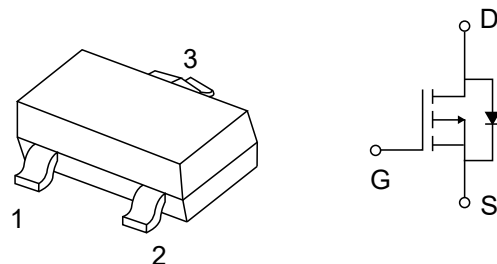
1.Features

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

2.Pinning information

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

SOT-23



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

Parameter		Symbol	Value	Units
Continuous Drain Current, $V_{GS} @ -4.5V$	$T_A = 25^\circ C$	I_D	-0.78	A
Continuous Drain Current, $V_{GS} @ -4.5V$	$T_A = 70^\circ C$		-0.62	
Pulsed Drain Current ①			-4.9	
Power Dissipation	$T_A = 25^\circ C$	P_D	540	mW
Linear Derating Factor			4.3	mW/ $^\circ C$
Gate-to-Source Voltage		V_{GS}	± 12	V
Peak diode Recovery dv/dt ②		dv/dt	-5	V/ns
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$

4.Thermal resist ance rating

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambien ④	$R_{\theta JA}$		230	$^\circ C/W$



5. 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		-4.9		mV/ $^\circ\text{C}$
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}$, $I_D=-0.61\text{A}$ ③			90	m Ω
		$V_{GS}=-2.7\text{V}$, $I_D=-0.31\text{A}$ ③			110	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.7		-1.5	V
Forward Transconductance	g_{fs}	$V_{DS}=-10\text{V}$, $I_D=-0.31\text{A}$	0.56			S
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-16\text{V}$, $V_{GS}=0\text{V}$			-1	μA
		$V_{DS}=-16\text{V}$, $V_{GS}=0\text{V}$, $T_J=125^\circ\text{C}$			-25	
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	
Total Gate Charge	Q_g	$I_D=-0.61\text{A}$		2.4	3.6	nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-16\text{V}$		0.56	0.84	
Gate-to-Drain ("Miller") Charge	Q_{gd}	$V_{GS}=-4.5\text{V}$, See Fig.6 and 9 ③		1	1.5	
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=-10\text{V}$		13		ns
Rise Time	t_r	$I_D=-0.61\text{A}$		18		
Turn-Off Delay Time	$t_{D(off)}$	$R_G=6.2\Omega$		22		
Fall Time	t_f	$R_D=16\Omega$, See Fig.10 ③		22		
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$		97		pF
Output Capacitance	C_{oss}	$V_{DS}=-15\text{V}$		53		
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$, See Fig.5		28		



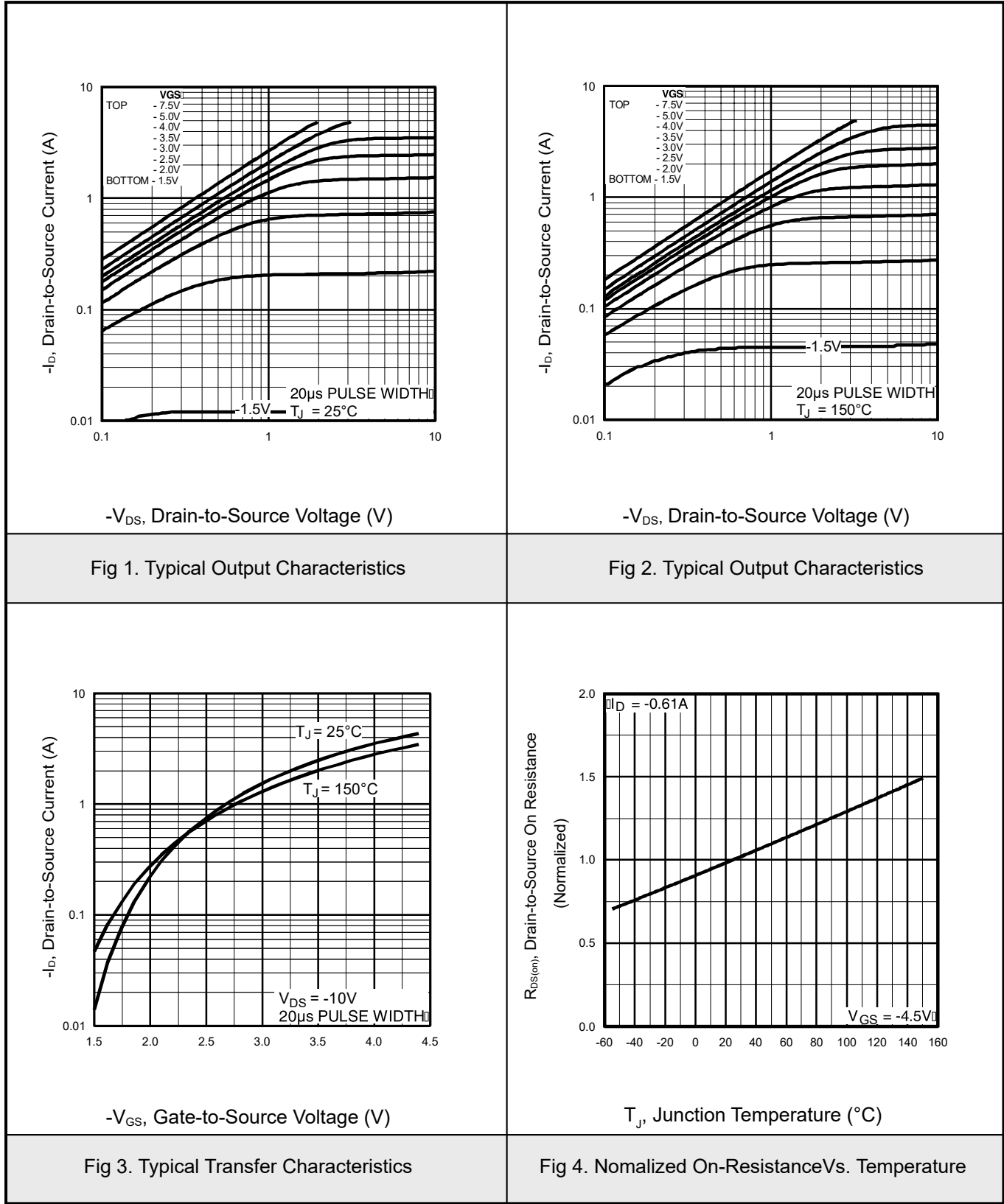
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			-0.54	A
Pulsed Source Current (Body Diode) ①	I_{SM}				-4.9	
Diode Forward Voltage	V_{SD}		$T_J=25^{\circ}\text{C}, I_S=-0.6\text{A}, V_{GS}=0\text{V}$ ③		-1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}, I_F=-0.6\text{A}$			35	53
Reverse Recovery Charge	Q_{rr}	$di/dt=100\text{A}/\mu\text{s}$ ③			26	39
						nC

Notes:

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

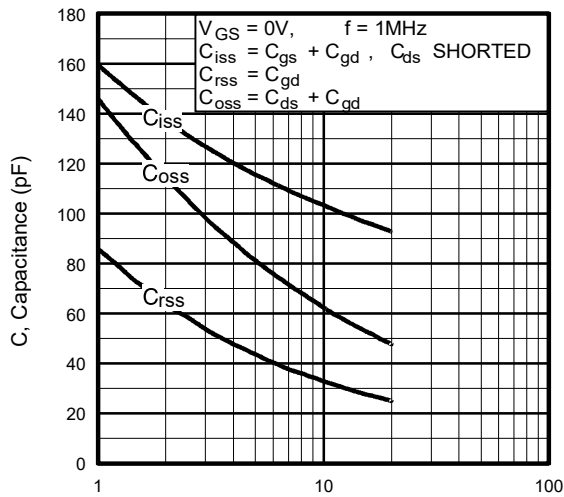


6.1 Typical Characteristics



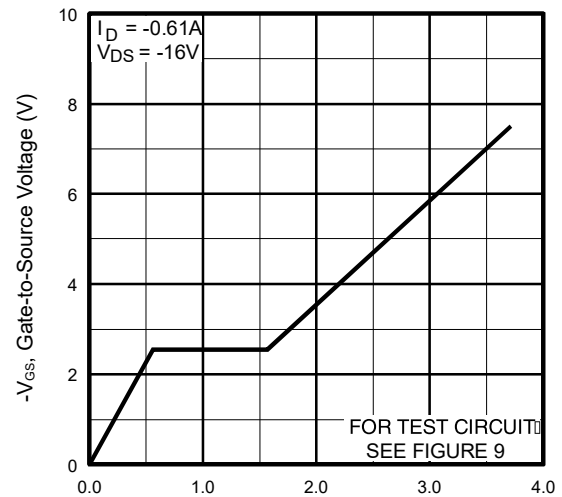


6.2 Typical Characteristics



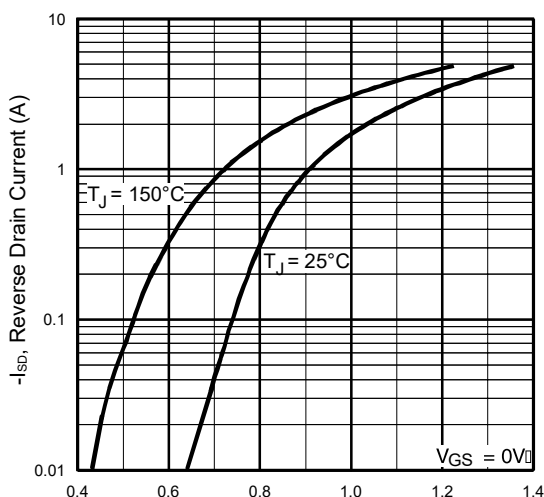
$-V_{DS}$, Drain-to-Source Voltage (V)

Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage



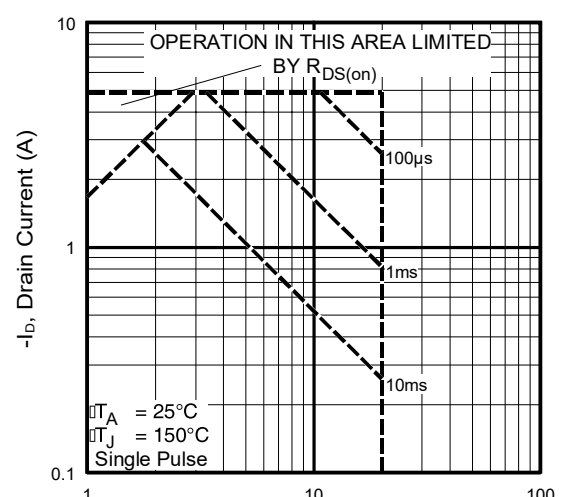
Q_G , Total Gate Charge (nC)

Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage



$-V_{SD}$, Source-to-Drain Voltage (V)

Fig 7. Typical Source-Drain Diode Forward Voltage

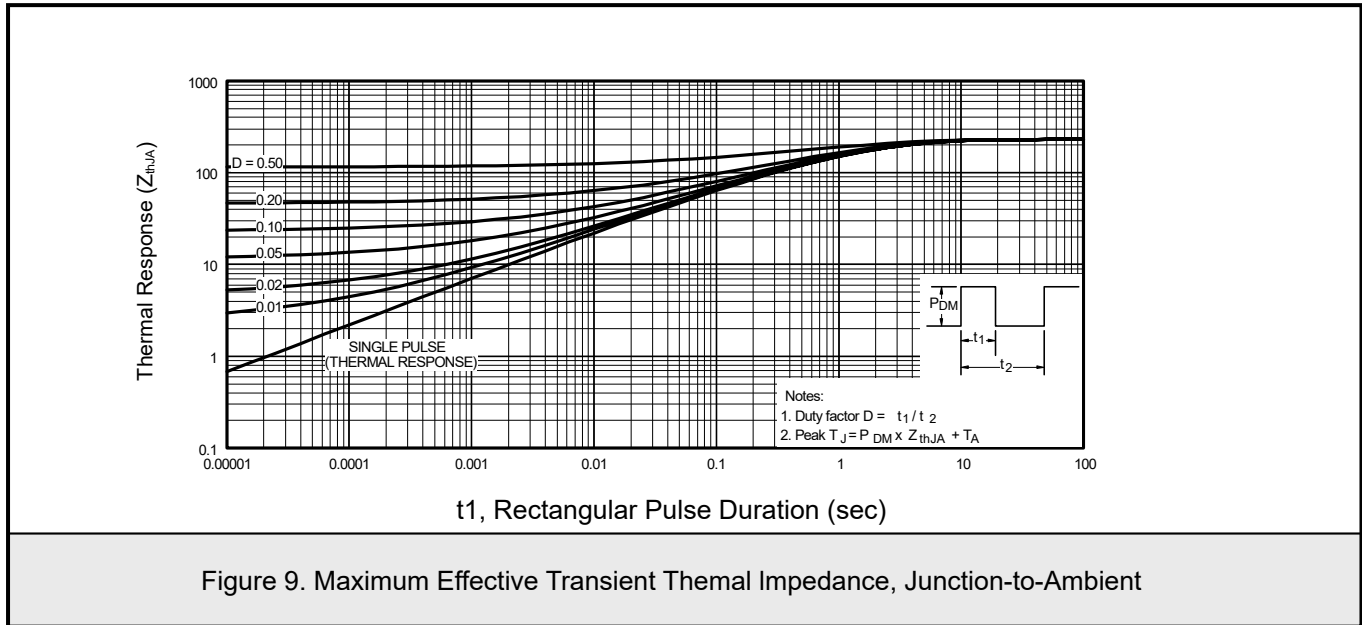


$-V_{DS}$, Drain-to-Source Voltage (V)

Fig 8. Maximum Safe Operating Area



6.3Typical Characterisitics





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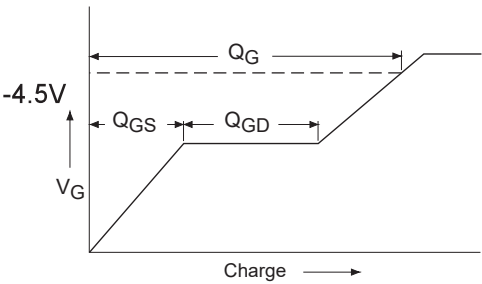


Fig 10a. Basic Gate Charge Wavefomm

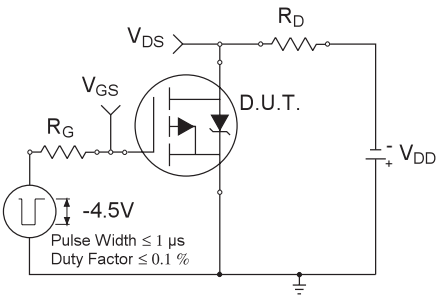


Fig 10a. Switching Time Test Circuit

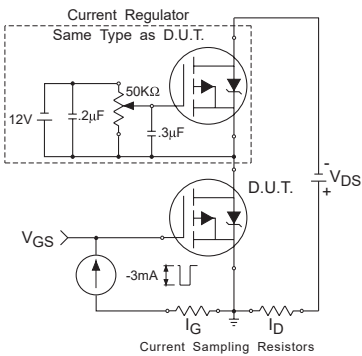


Fig 11a. Gate Charge Test Circuit

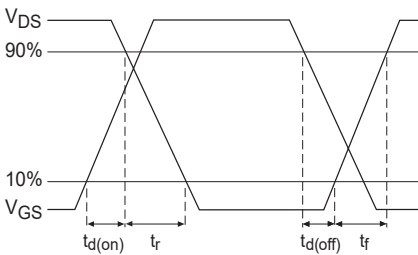
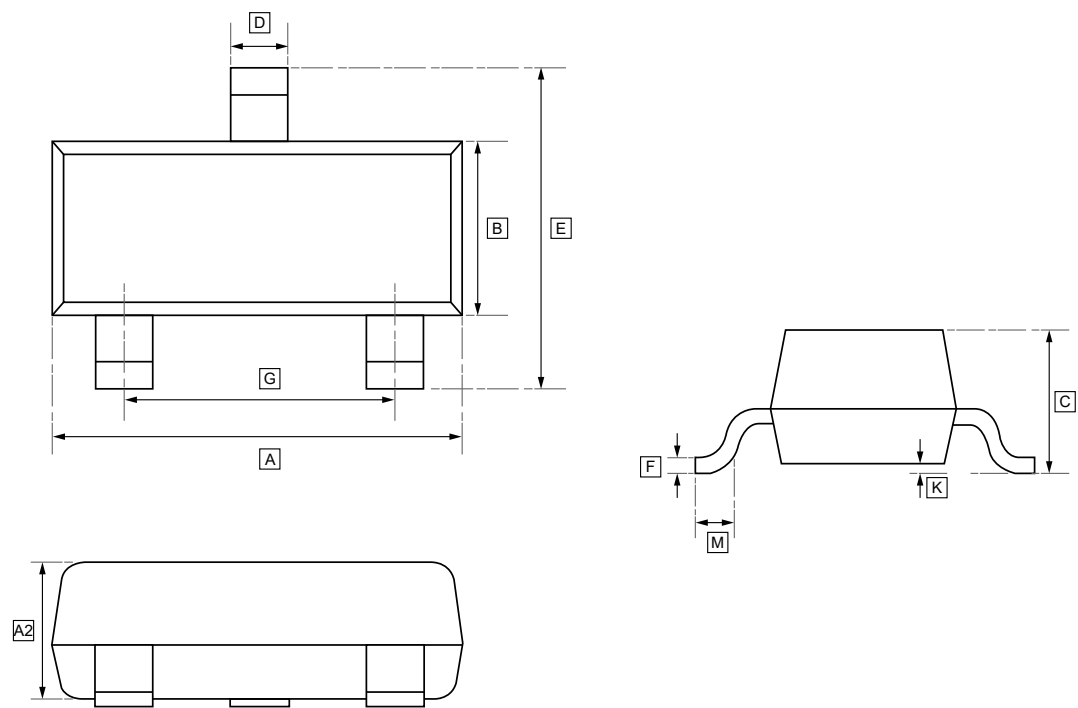


Fig 11b. Switching Time Waveformms



7.SOT-23 Package Outline Dimensions

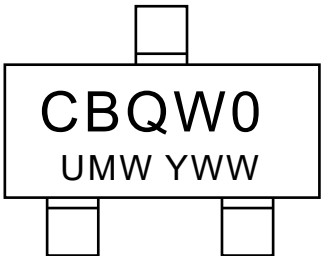


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	2.55	2.00	0.10	-	1.05	0.115



8.Ordering information



YWW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRLML6302TR	SOT-23	3000	Tape and reel



9.Disclaimer

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