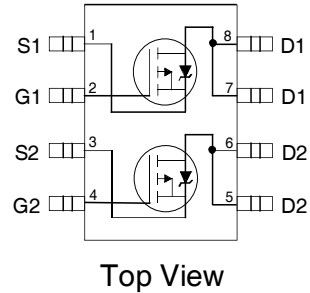


**Features**

- $V_{DS} (V) = -20V$
- $R_{DS(ON)} < 18\ m\ \Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 26\ m\ \Omega$  ( $V_{GS} = -2.5V$ )
- Trench Technology
- Ultra Low On-Resistance
- Low Profile (<1.1mm)
- Available in Tape & Reel
- 2.5V Rated
- Lead-Free



**Absolute Maximum Ratings**

	Parameter	Max.	Units
$V_{DS}$	Drain-Source Voltage	-20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-9.0	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-7.1	
$I_{DM}$	Pulsed Drain Current <sup>①</sup>	-71	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation <sup>③</sup>	2.0	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation <sup>③</sup>	1.3	W
	Linear Derating Factor	16	mW/ $^\circ C$
$V_{GS}$	Gate-to-Source Voltage	$\pm 12$	V
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

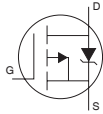
**Thermal Resistance**

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient <sup>③</sup>	62.5	$^\circ C/W$

### Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	-20			V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient		-0.02		V/°C	Reference to 25°C, I <sub>D</sub> = -1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance			18	mΩ	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -9.0A ②
				26		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -7.7A ②
V <sub>GS(th)</sub>	Gate Threshold Voltage	-0.45		-1.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
g <sub>fs</sub>	Forward Transconductance	19			S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -9.0A
I <sub>DSS</sub>	Drain-to-Source Leakage Current			-1.0	μA	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V
				-25		V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage			-100	nA	V <sub>GS</sub> = -12V
	Gate-to-Source Reverse Leakage			100		V <sub>GS</sub> = 12V
Q <sub>g</sub>	Total Gate Charge		42	63	nC	I <sub>D</sub> = -9.0A
Q <sub>gs</sub>	Gate-to-Source Charge		7.1	11		V <sub>DS</sub> = -16V
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge		12	18		V <sub>GS</sub> = -5.0V
t <sub>d(on)</sub>	Turn-On Delay Time		17		ns	V <sub>DD</sub> = -10V
t <sub>r</sub>	Rise Time		36			I <sub>D</sub> = -1.0A
t <sub>d(off)</sub>	Turn-Off Delay Time		170			R <sub>G</sub> = 6.0Ω
t <sub>f</sub>	Fall Time		190			R <sub>D</sub> = 10Ω ②
C <sub>iss</sub>	Input Capacitance		2940		pF	V <sub>GS</sub> = 0V
C <sub>oss</sub>	Output Capacitance		630			V <sub>DS</sub> = -15V
C <sub>rss</sub>	Reverse Transfer Capacitance		420			f = 1.0MHz

### Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)			-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①			-71		
V <sub>SD</sub>	Diode Forward Voltage			-1.2	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = -2.0A, V <sub>GS</sub> = 0V ②
t <sub>rr</sub>	Reverse Recovery Time		180	270	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = -2.0A
Q <sub>rr</sub>	Reverse Recovery Charge		300	450	nC	di/dt = -100A/μs ②

#### Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ③ Surface mounted on FR-4 board, t ≤ 10sec.

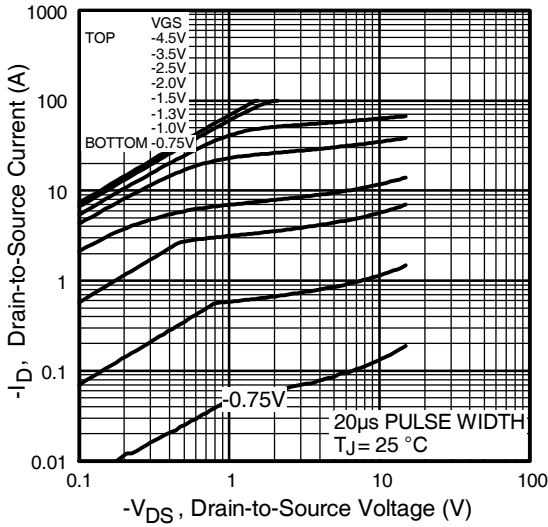


Fig 1. Typical Output Characteristics

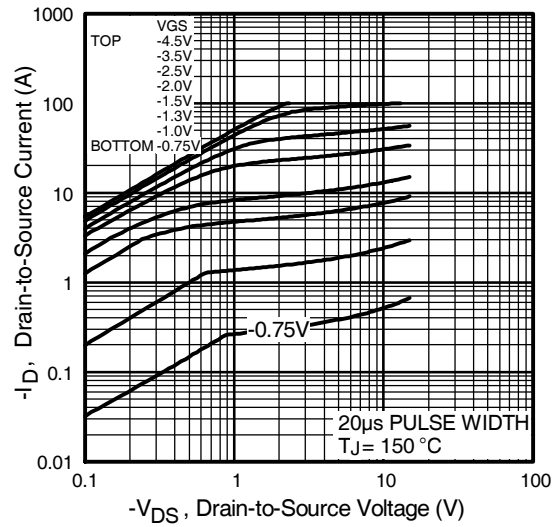


Fig 2. Typical Output Characteristics

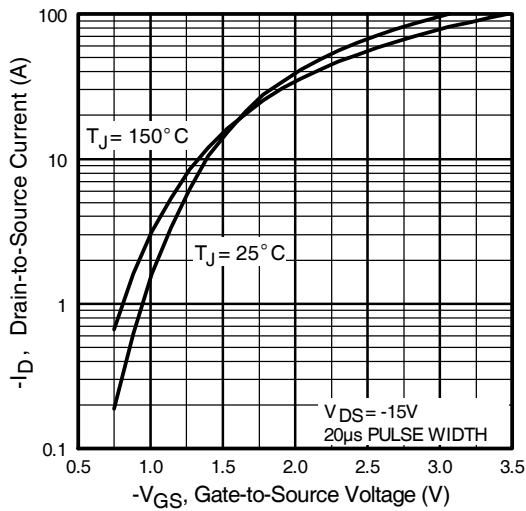


Fig 3. Typical Transfer Characteristics

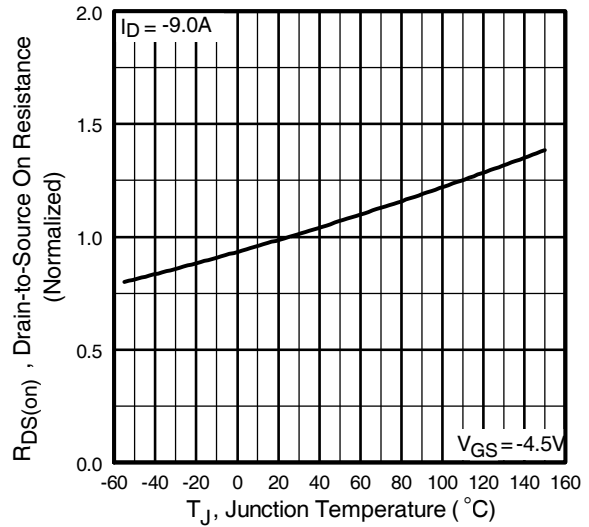


Fig 4. Normalized On-Resistance Vs. Temperature

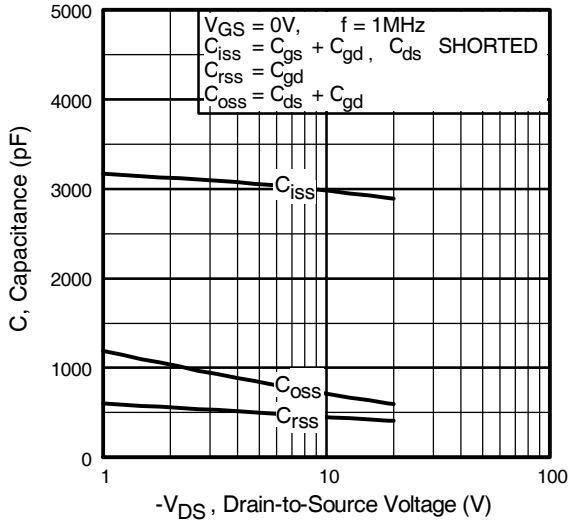


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

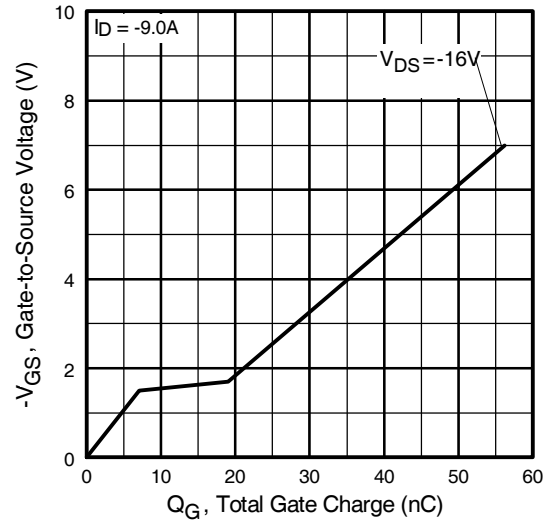


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

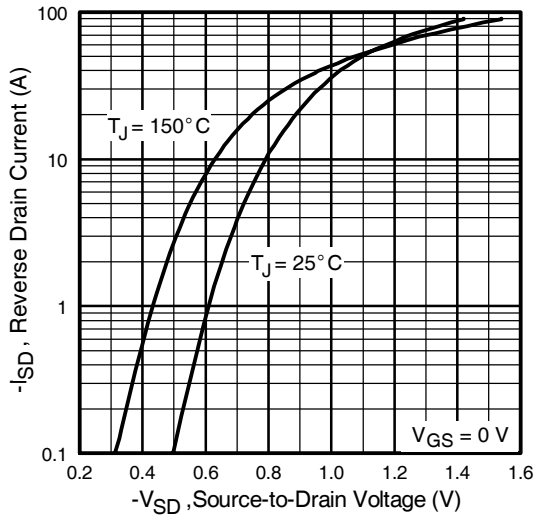


Fig 7. Typical Source-Drain Diode Forward Voltage

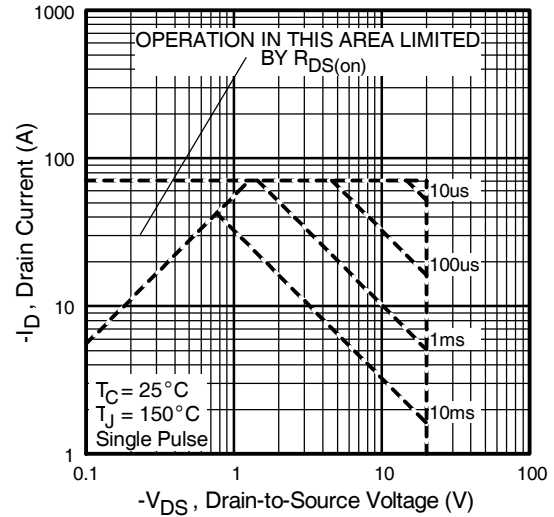


Fig 8. Maximum Safe Operating Area

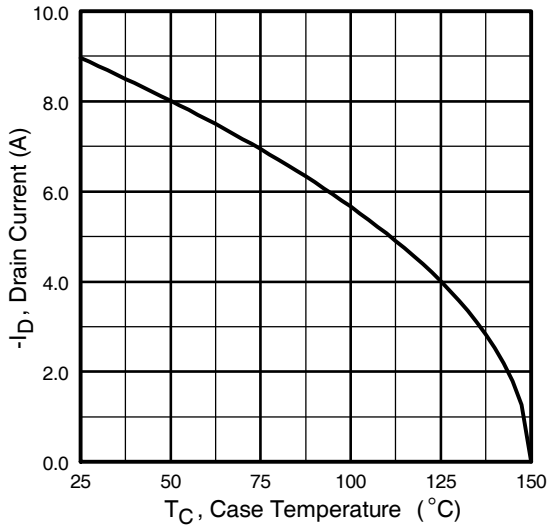


Fig 9. Maximum Drain Current Vs. Case Temperature

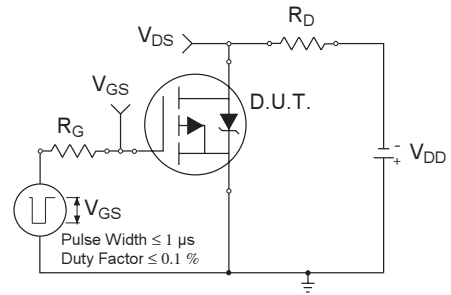


Fig 10a. Switching Time Test Circuit

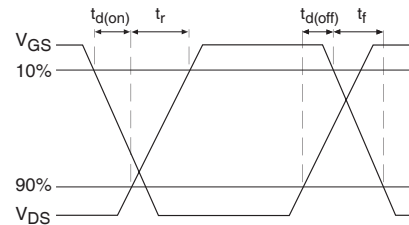


Fig 10b. Switching Time Waveforms

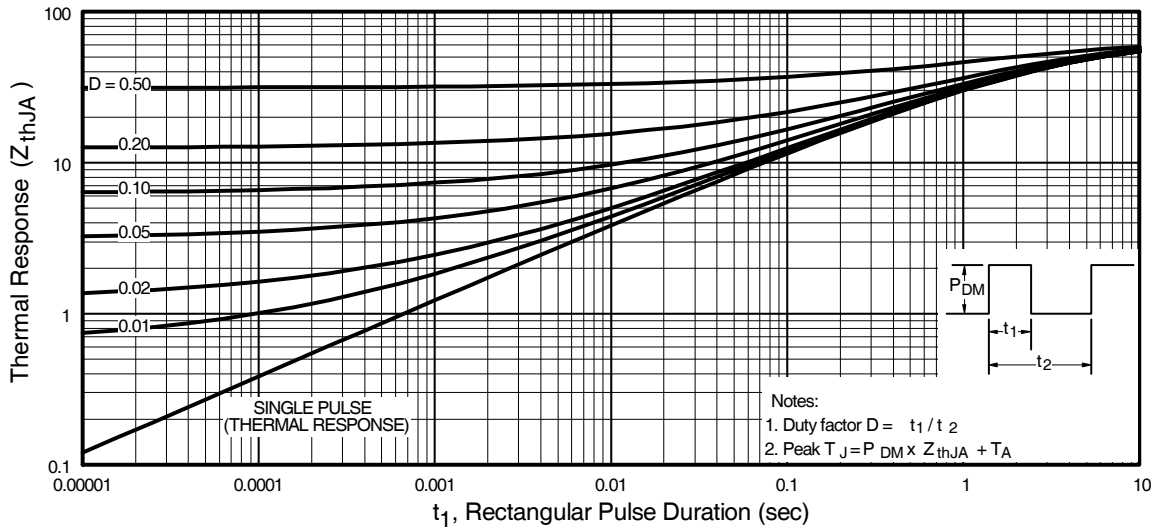


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

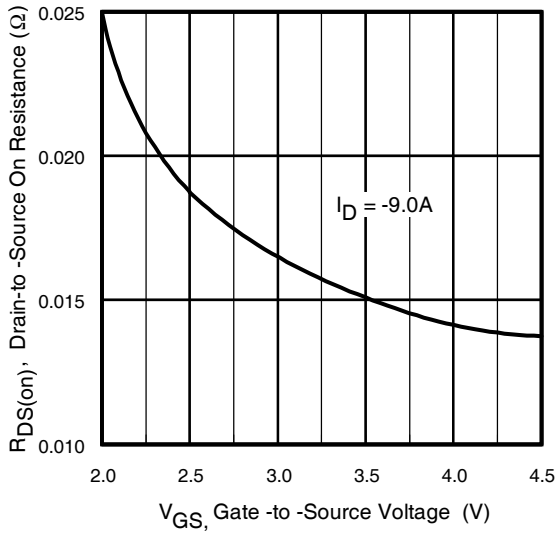


Fig 12. Typical On-Resistance Vs. Gate Voltage

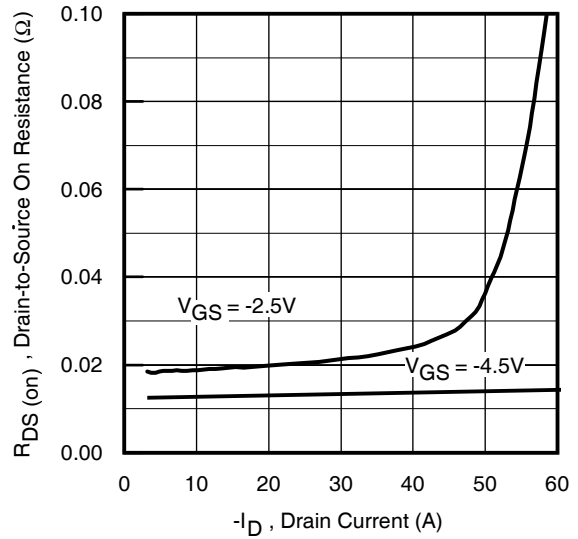


Fig 13. Typical On-Resistance Vs. Drain Current

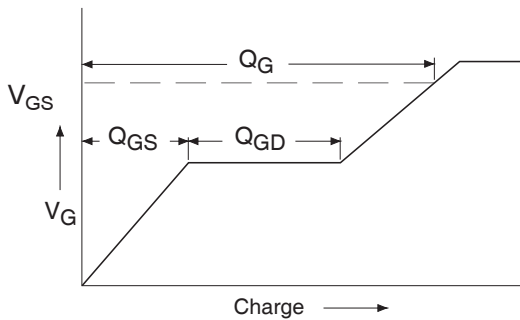


Fig 14a. Basic Gate Charge Waveform

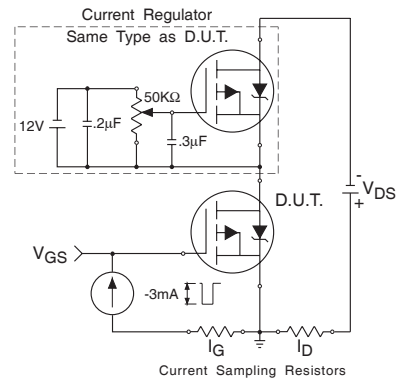
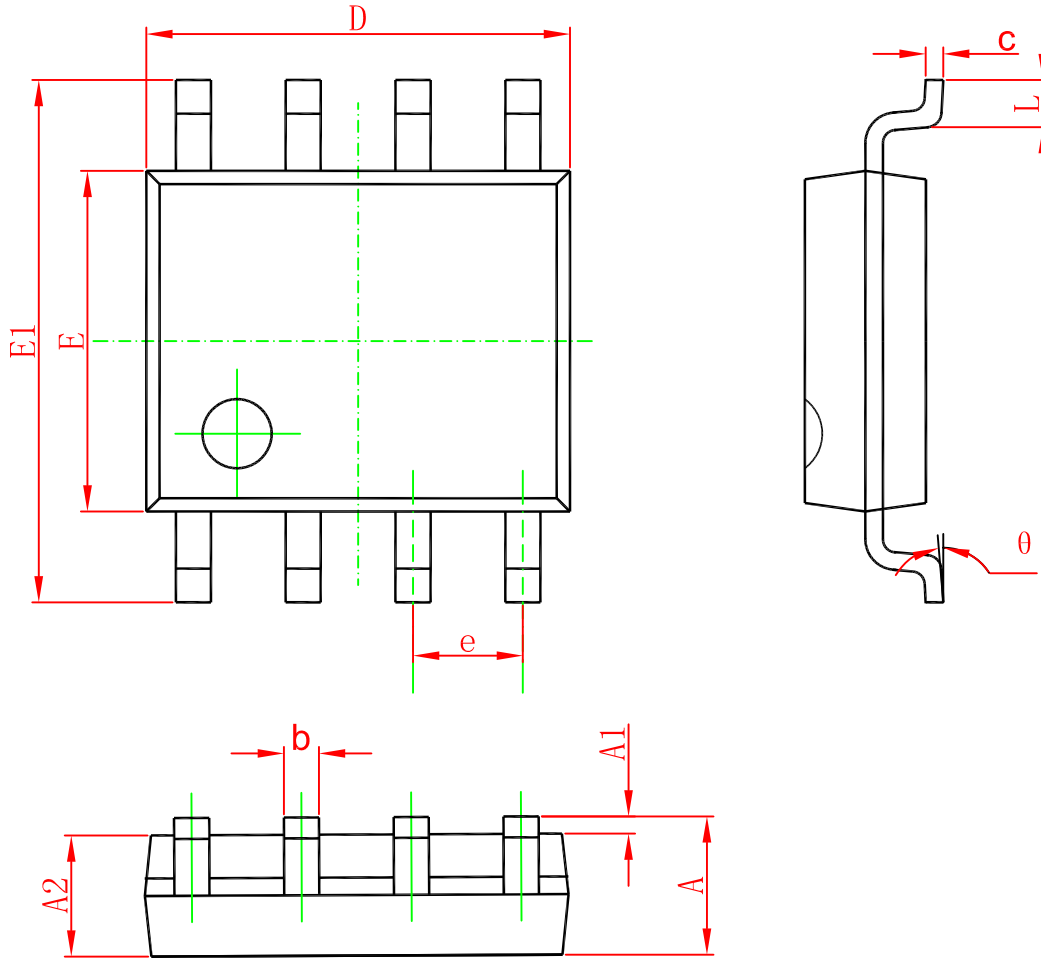


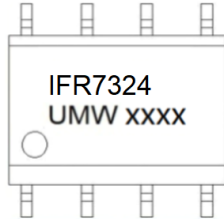
Fig 14b. Gate Charge Test Circuit

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

**Marking**



**Ordering information**

Order code	Package	Baseqty	Deliverymode
UMW IRF7324TR	SOP-8	3000	Tape and reel



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