

WPM1485
Single P-Channel, -12V, -7.4A, Power MOSFET
[Http://www.willsemi.com](http://www.willsemi.com)

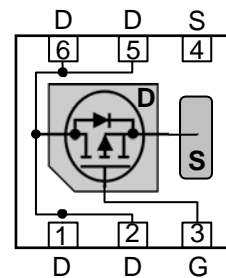
V _{DS} (V)	R _{ds(on)} (Ω)
-12	0.016@ V _{GS} =-4.5V
	0.022@ V _{GS} =-2.5V
	0.032@ V _{GS} =-1.8V



DFN2×2-6L

Descriptions

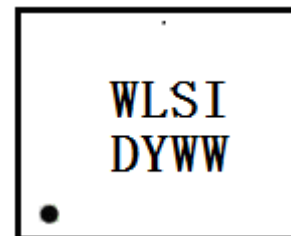
The WPM1485 is P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R_{DS(ON)} with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WPM1485 is Pb-free and Halogen-free.


Pin configuration (Top view)
Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package DFN2×2-6L

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging



WLSI = Willsemi
 D = Device Code
 YY = Year
 WW = Week

Marking
Order information

Device	Package	Shipping
WPM1485-6/TR	DFN2×2-6L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	-12		V
Gate-Source Voltage		V_{GS}	± 8		
Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	I_D	-7.4	-6.4	A
	$T_A=70^\circ\text{C}$		-5.9	-5.1	
Maximum Power Dissipation ^a	$T_A=25^\circ\text{C}$	P_D	1.8	1.3	W
	$T_A=70^\circ\text{C}$		1.1	0.8	
Continuous Drain Current ^b	$T_A=25^\circ\text{C}$	I_D	-5.7	-4.6	A
	$T_A=70^\circ\text{C}$		-4.5	-3.6	
Maximum Power Dissipation ^b	$T_A=25^\circ\text{C}$	P_D	1.0	0.6	W
	$T_A=70^\circ\text{C}$		0.6	0.4	
Pulsed Drain Current ^c		I_{DM}	-30		A
Operating Junction Temperature		T_J	-55~+150		$^\circ\text{C}$
Lead Temperature		T_L	260		$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150		$^\circ\text{C}$

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	55	69	$^\circ\text{C/W}$
	Steady State		70	91	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	88	115	
	Steady State		125	179	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	34	44	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

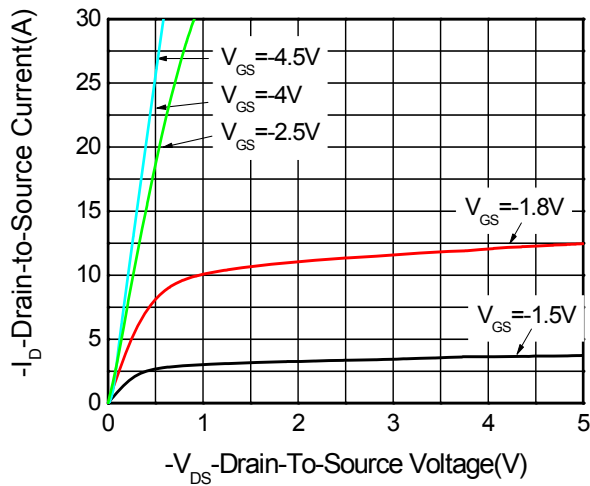
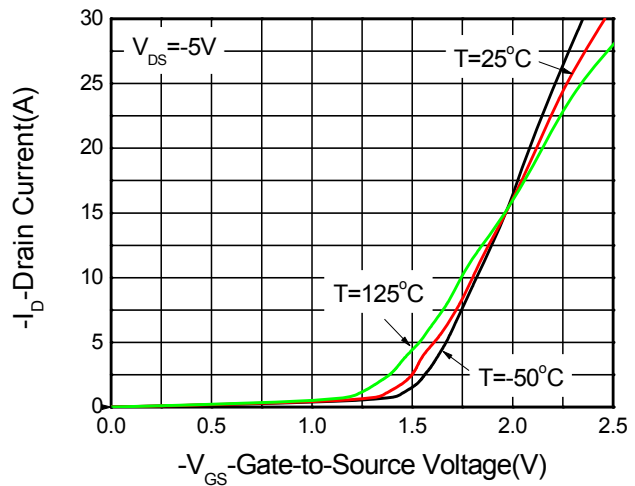
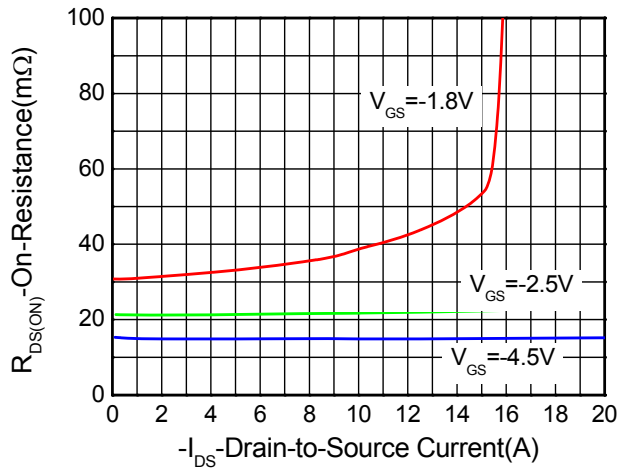
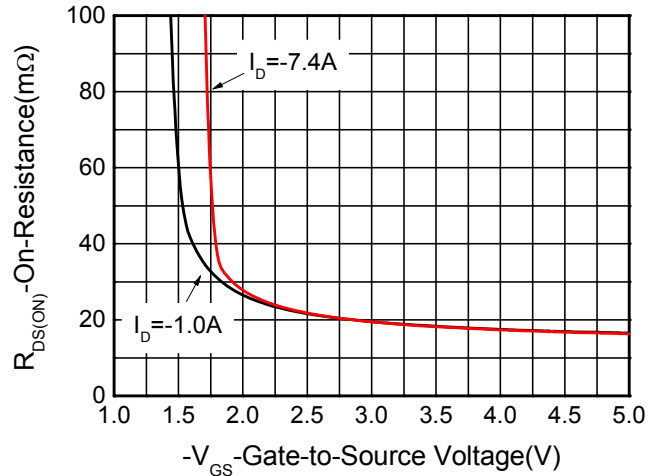
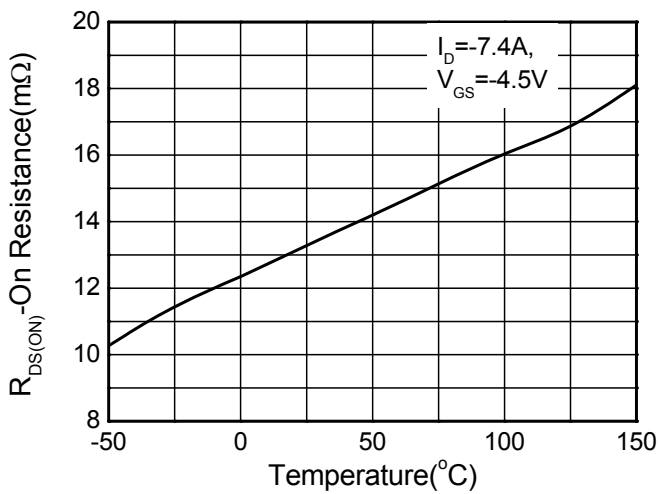
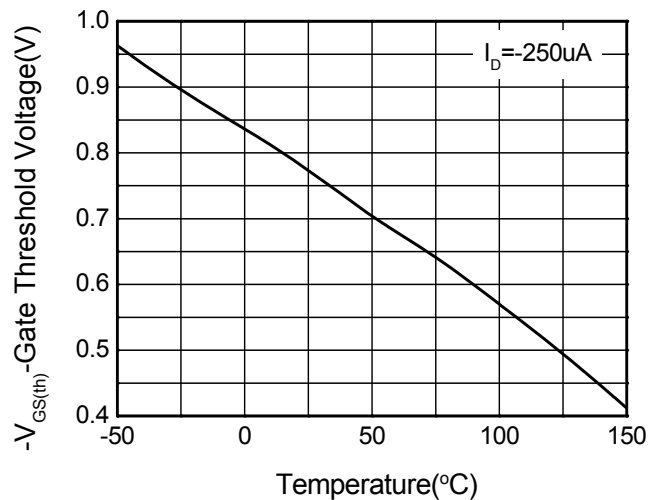
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

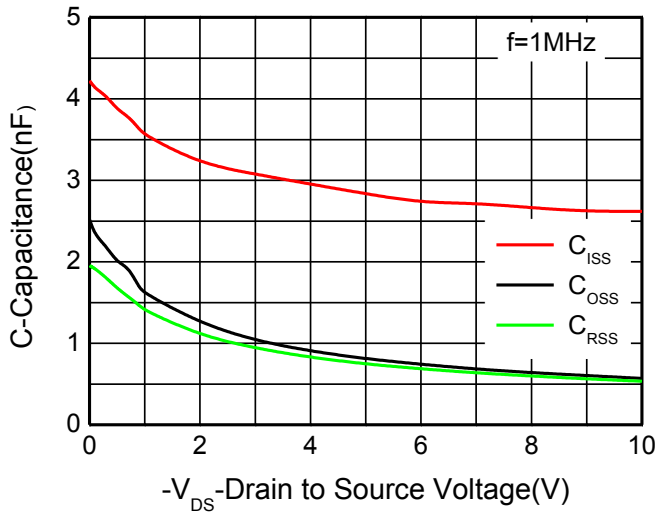
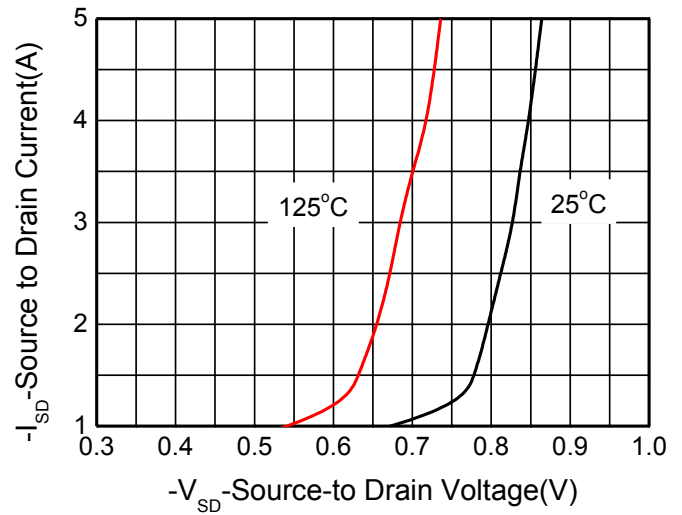
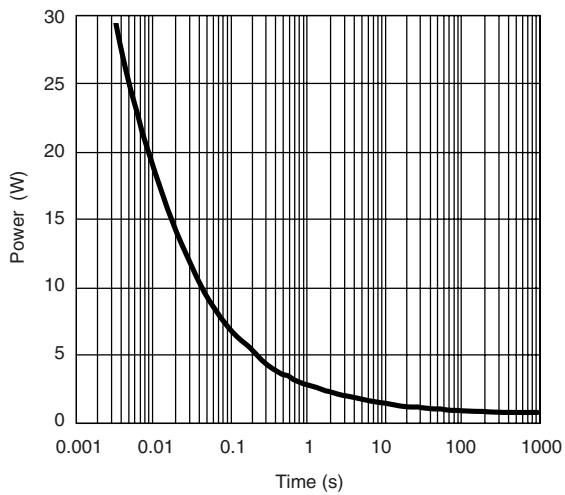
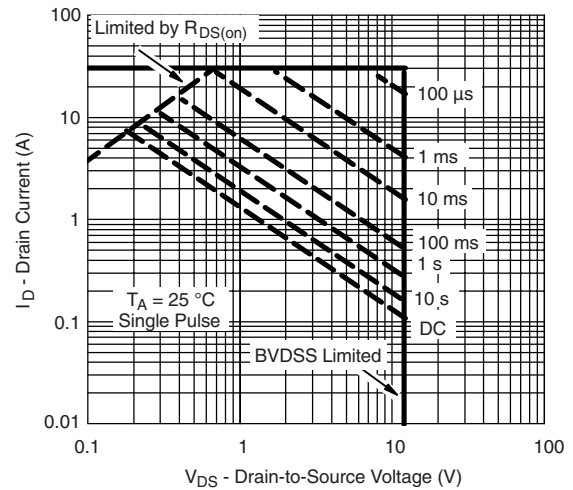
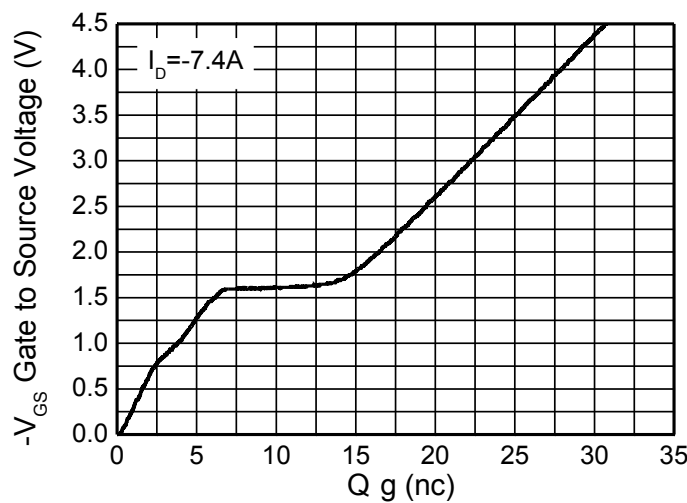
c Pulse width<380 μs , Duty Cycle<2%

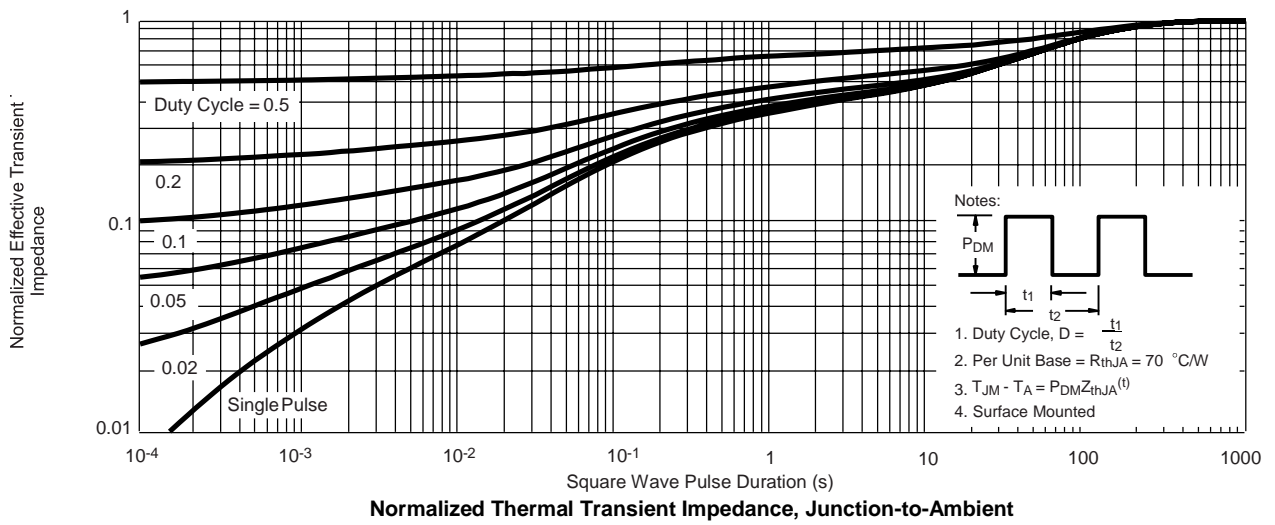
d Maximum junction temperature $T_J=150^\circ\text{C}$.

Electronics Characteristics (Ta=25°C, unless otherwise noted)

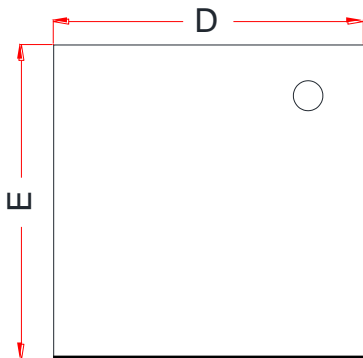
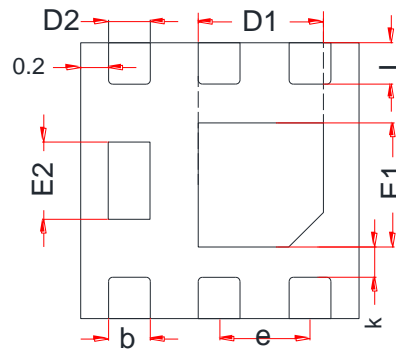
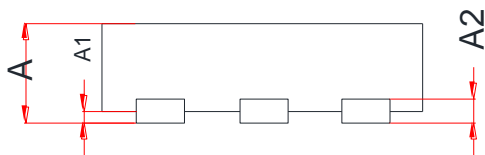
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}$			-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	-0.45	-0.60	-0.95	V
Drain-to-source On-resistance ^{b, c}	$R_{DS(on)}$	$V_{GS} = -4.5\text{V}, I_D = -7.4\text{A}$		16	19	m Ω
		$V_{GS} = -4\text{V}, I_D = -7\text{A}$		17	20	
		$V_{GS} = -2.5\text{V}, I_D = -6.5\text{A}$		22	25	
		$V_{GS} = -1.8\text{V}, I_D = -2.3\text{A}$		32	50	
Forward Transconductance	g_{FS}	$V_{DS} = -5.0\text{V}, I_D = -7.4\text{A}$		21		S
CAPACITANCES, CHARGES						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz},$ $V_{DS} = -10\text{ V}$		2620		pF
Output Capacitance	C_{OSS}			570		
Reverse Transfer Capacitance	C_{RSS}			530		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5\text{ V},$ $V_{DS} = -6.0\text{ V},$ $I_D = -7.4\text{A}$		30.75		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.90		
Gate-to-Source Charge	Q_{GS}			6.10		
Gate-to-Drain Charge	Q_{GD}			7.60		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5\text{ V},$ $V_{DD} = -6.0\text{ V},$ $I_D = -7.4\text{A},$ $R_G = 6\ \Omega$		22		ns
Rise Time	t_r			40		
Turn-Off Delay Time	$t_d(OFF)$			90		
Fall Time	t_f			65		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = -8.0\text{A}$		-0.88	-1.5	V

Typical Characteristics (Ta=25°C, unless otherwise noted)

Output characteristics

Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-Source voltage

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature

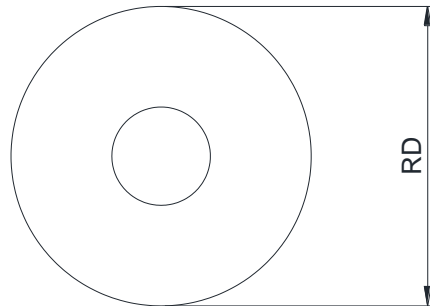
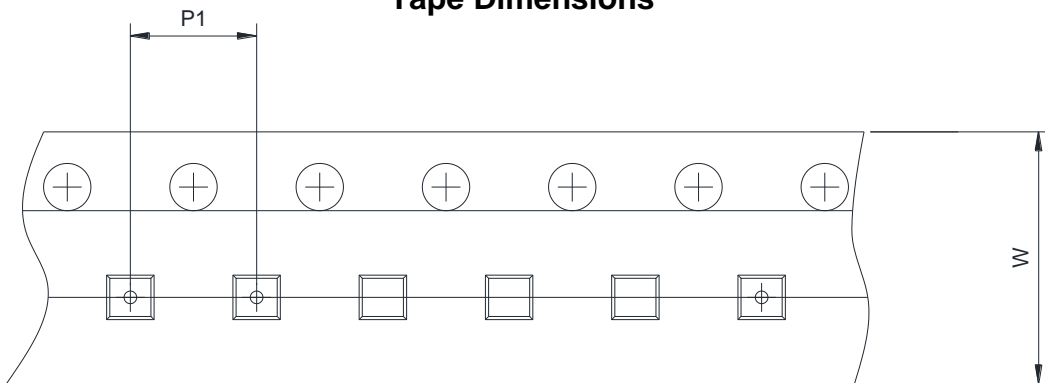
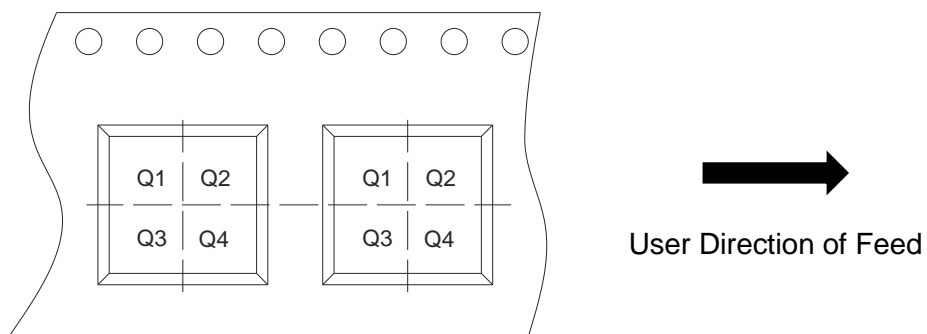

Capacitance

Body diode forward voltage

Single Pulse Power, Junction-to-Ambient

Safe Operating Area, Junction-to-Ambient

Gate Charge Characteristics



Transient thermal response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS
DFN2x2-6L

TOP VIEW

BOTTOM VIEW

SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.85
A1	0.00	0.02	0.05
A2	0.20 Ref.		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
D1	0.85	0.90	0.95
D2	0.25	0.30	0.35
E	1.95	2.00	2.05
E1	0.75	0.80	0.85
E2	0.56 Ref.		
e	0.65 BSC.		
L	0.30	0.35	0.40
K	0.20	-	-

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch <input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm <input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1 <input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4