



JOCDA3ABN-W8

Rev.A.1.0

DESCRIPTION:

The products are gate driver opto-couplers in a plastic WSOP8 package. The device consists of an infrared LED optically coupled to an integrated high-gain, high-speed photodetector IC chip. It provides guaranteed performance

ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
LED	Forward Current	I_F	50	mA
	Peak Forward Current	I_{FP}	1 ^①	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	100	mW
Detector	Output Voltage	V_O	35	V
	Supply Voltage	V_{CC}	35	V
	Power Dissipation	P_C	400	mW
Isolation Voltage		V_{iso}	7500 ^②	Vrms
Operating Temperature		T_{opr}	-40~110	°C
Junction Temperature		T_j	125	°C
Storage Temperature		T_{stg}	-55~125	°C
Total Power Dissipation		P_{tot}	500	mW
Soldering Temperature		T_{sol}	260	°C

NOTE1: 100μs pulse, 100Hz frequency**NOTE2**: AC for 1minute, R.H.=40~60%**ELECTRICAL CHARACTERISTICS** (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	$I_F=10mA$	-	1.35	1.6	V
	Reverse Current	I_R	$V_R=6V$	-	-	1	μA
	Terminal Capacitance	C_t	$V=0, f=1MHz$	-	60	-	pF
Output	Peak High-level Output Current	I_{OPH}	$V_O=V_{CC}-4V$, Pulse width≤50μs	-1	-	-	A
			$V_O=V_{CC}-15V$, Pulse width≤10μs	-3	-	-	A
	Peak Low-level Output Current	I_{OPL}	$V_O=V_{EE}+2.5V$, Pulse width≤50μs	1	-	-	A
			$V_O=V_{EE}+15V$, Pulse width≤10μs	3	-	-	A
	High Level Supply Current	I_{CCH}	$I_F=7$ to 16mA, $V_O=Open$	-	-	2.5	mA
	Low Level Supply Current	I_{CCL}	$V_F=-3$ to 0.8V, $V_O=Open$	-	-	2.5	mA
	High Level Output Voltage	V_{OH}	$I_O=-100mA$	$V_{CC}-4$	-	-	V

	Low Level Output Voltage	V_{OL}	$I_O=100mA$	-	0.2	0.5	V
	Threshold Input Current	I_{FLH}	$V_O>5V$	-	1.2	5	mA
	Threshold Input Voltage	V_{FHL}	$V_O<5V$	0.8	-	-	V
	Supply Voltage	V_{CC}	-	15	-	30	V
	UVLO Threshold	VUVLO+	$V_O>5V$, $I_F=10mA$	12.1	12.8	13.5	V
		VUVLO-	$V_O<5V$, $I_F=10mA$	11.1	11.8	12.4	V

SWITCHING SPECIFICATION

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Propagation Delay Time to High Output Level	t_{PLH}	$R_g=10\Omega$, $C_g=25nF$, $f=20kHz$, Duty Cycle=50%, $I_F=7mA$, $V_{CC}=30V$	30	-	500	ns
Propagation Delay Time to Low Output Level	t_{PHL}		30	-	500	
Propagation Delay Difference Between Any Two Parts	$t_{PHL} - t_{PLH}$		-	-	350	
Output Rise Time (10 to 90%)	t_r	$R_g=10\Omega$, $C_g=25nF$, $I_F=0 \rightarrow 7mA$, $V_{CC}=30V$	-	50	-	
Output Fall Time (90 to 10%)	t_f	$R_g=10\Omega$, $C_g=25nF$, $I_F=7 \rightarrow 0mA$, $V_{CC}=30V$	-	50	-	
Common Mode Transient Immunity at High Level Output	$ CM_H $	$I_F=7mA$ $V_{CC}=30V$, $T_a=25^\circ C$, $V_O(min)=26V$ $V_{CM}=1500V_{pp}$	± 35	-	-	kV/ μs
Common Mode Transient Immunity at Low Level Output	$ CM_L $	$I_F=0mA$ $V_{CC}=30V$, $T_a=25^\circ C$, $V_O(max)=1V$ $V_{CM}=1500V_{pp}$	± 35	-	-	kV/ μs

All Typical values at $T_a=25$

Note1: Input signal ($f=25kHz$, duty=50%, $t_r=t_f=5ns$ or less). C_L is less than 15 pF which includes probe and stray wiring capacitance.

Note2: CM_H is the maximum rate of fall of the common mode voltage that can be sustained with the output voltage in the logic high state ($V_O>26V$).

Note3: CM_L is the maximum rate of rise of the common mode voltage that can be sustained with the output voltage in the logic low state ($V_O<1V$).

Recommended Operating Conditions^{①②}

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Input On-state Current	$I_{F(ON)}^{③}$	7	-	10	mA
Input Off-state Voltage	$V_{F(OFF)}$	0	-	0.8	V
Supply Voltage	$V_{CC}^{④}$	15	-	30	V
Operating Frequency	$f^{⑤}$	-	-	25	kHz

Note1: The recommended operating conditions are given as a design guide necessary to obtain the intended performance of the device. Each parameter is an independent value. When creating a system design using this device, the electrical characteristics specified in this datasheet should also be considered.

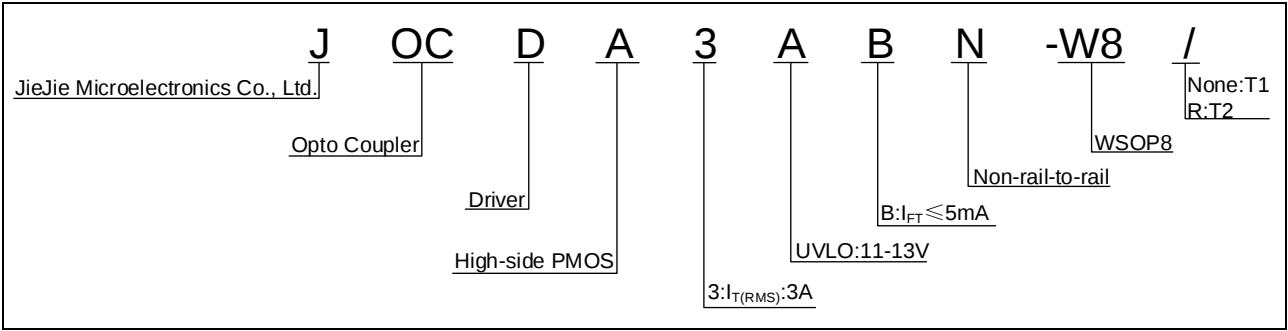
Note2: A ceramic capacitor(0.1μF) should be connected between pin 6 (V_{CC}) and pin 4 (GND) to stabilize the operation of a high-gain linear amplifier. Otherwise, this photocoupler may not switch properly. The bypass capacitor should be placed within 1 cm of each pin.

Note3: The rise and fall times of the input on-current should be less than 0.5 μs.

Note4: If the rising slope of the supply voltage (V_{CC}) for the detector is steep, stable operation of the internal circuits cannot be guaranteed. Be sure to set 3 V/μs or less for a rising slope of the V_{CC} .

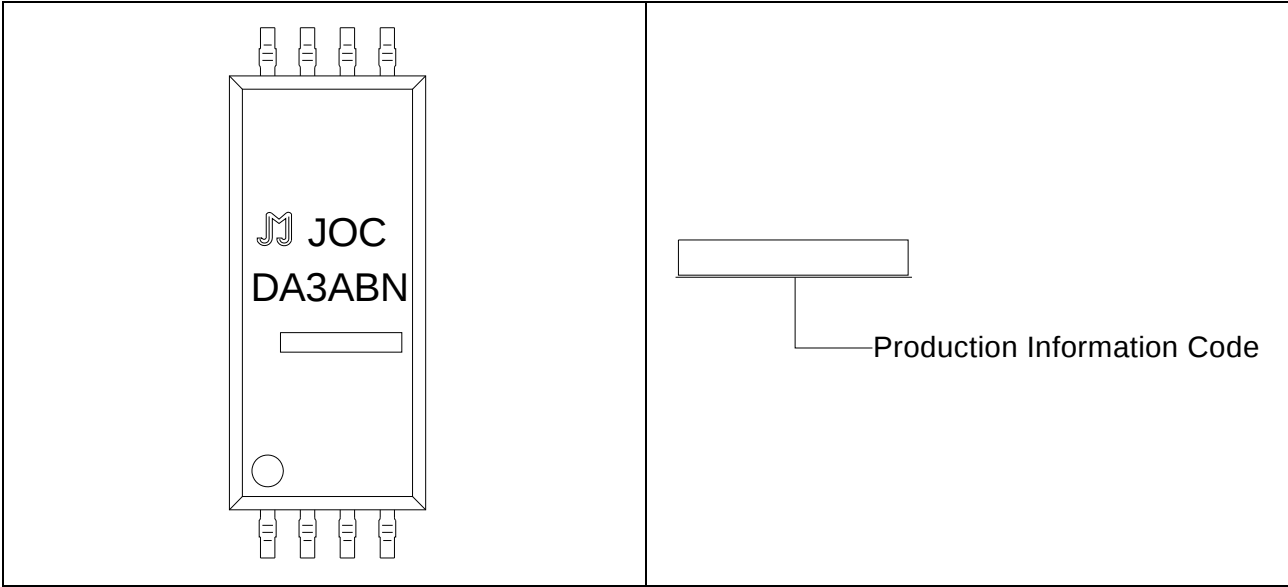
Note5: Denotes the operating range, not the recommended operating condition.

ORDERING INFORMATION



Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity –Outer box
WSOP8	1200 Units/Reel	1 Reel/Inner box	5 Inner box/Outer box =6k Units

MARKING



Characteristics Curves

FIG.1: Forward Current vs. Forward Voltage

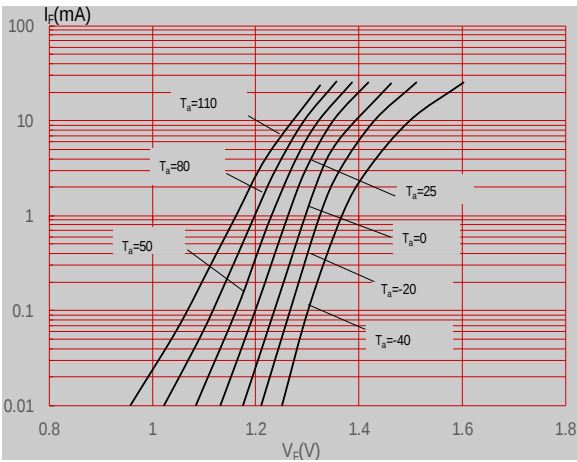
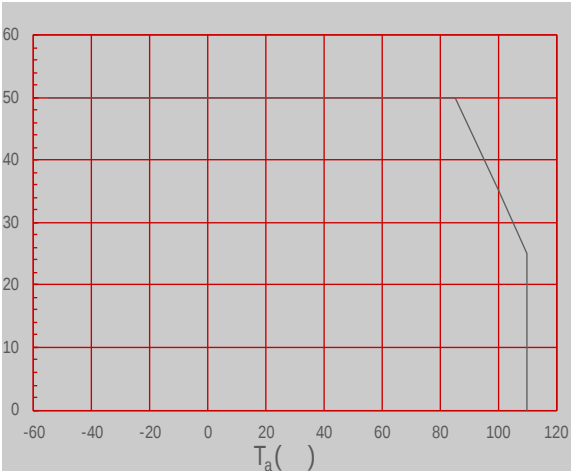


FIG.2: Max. Allowable LED Forward Current vs. Ambient Temperature





Output Voltage vs. Ambient

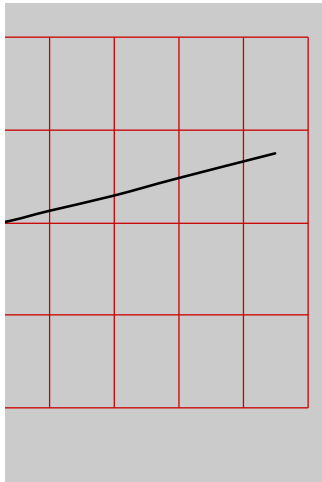
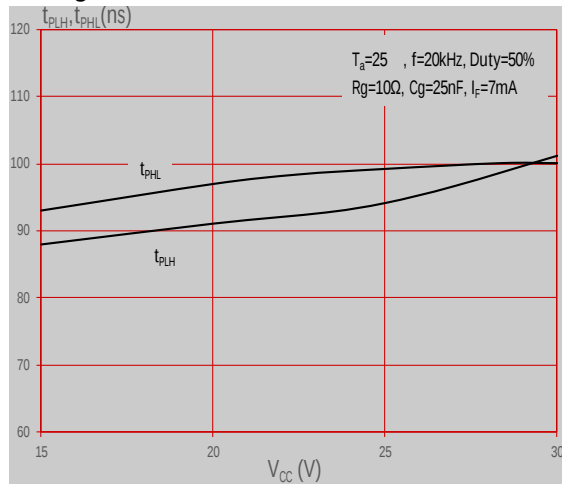


FIG.8: High-level Output Voltage vs. Ambient Temperature

FIG.13: Propagation Delay Time vs. Supply Voltage



Test Circuits

FIG.14: Switching Time Test Circuit and Waveform

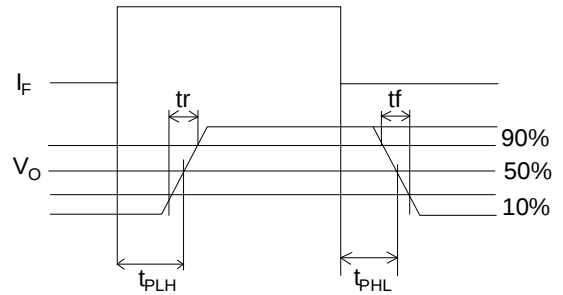
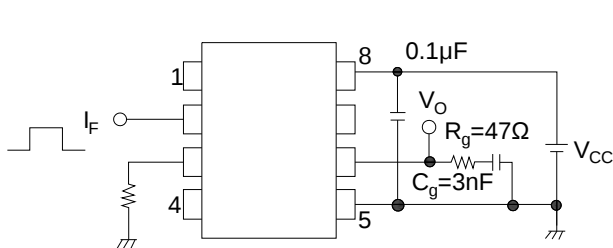
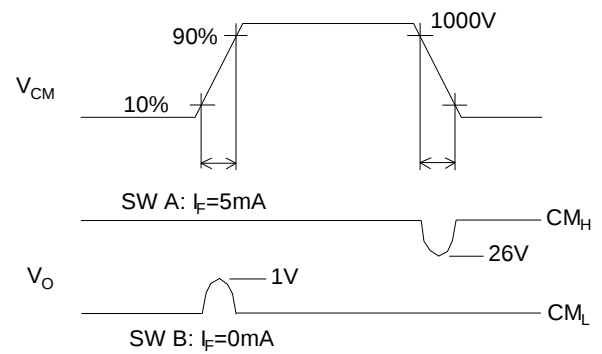
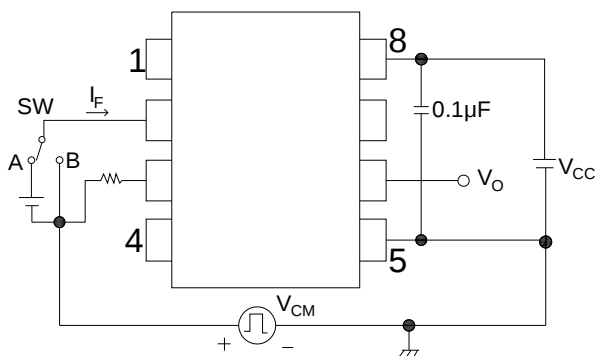
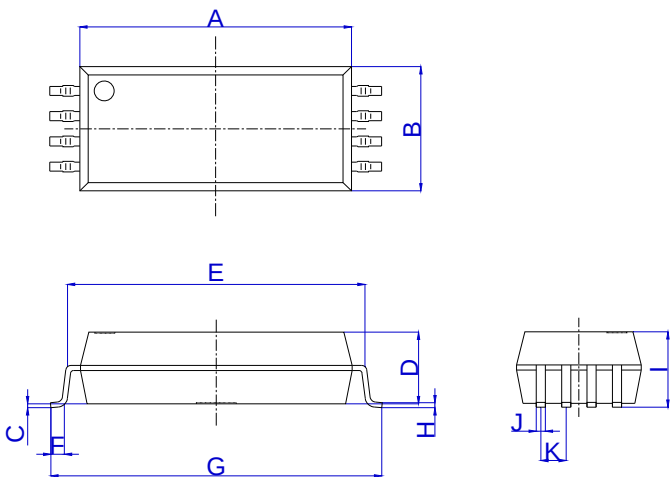


FIG.15: Common-Mode Transient Immunity Test Circuit and Waveform

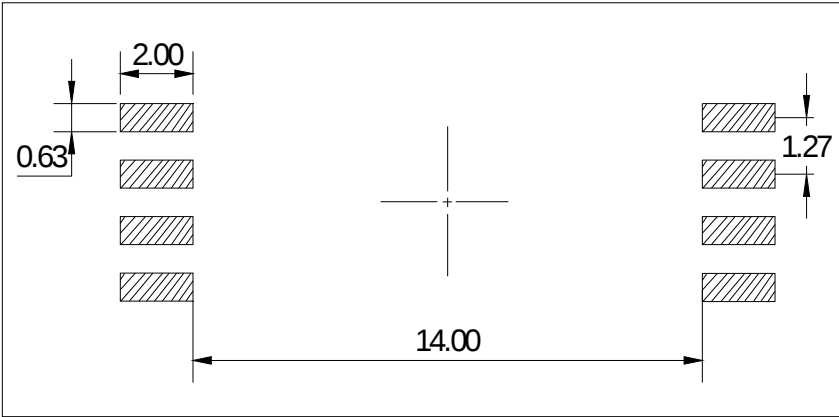


Package Dimension (Unit: mm)



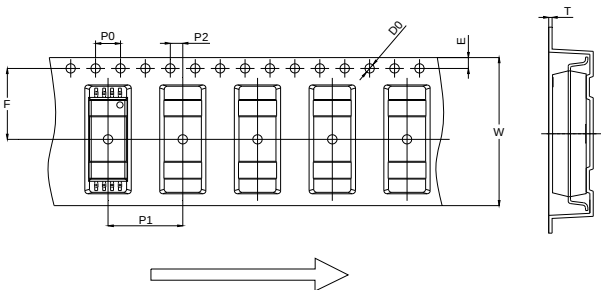
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	13.50		13.70	0.531		0.539
B	6.15		6.35	0.242		0.250
C	0.10		0.30	0.004		0.012
D	3.50		3.70	0.138		0.146
E	14.71		15.31	0.579		0.603
F	0.52		1.02	0.020		0.040
G	16.36		16.86	0.644		0.664
H	0.10		0.40	0.004		0.016
I	3.65		3.95	0.144		0.156
J	0.307		0.607	0.012		0.024
K	1.02		1.52	0.040		0.060

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



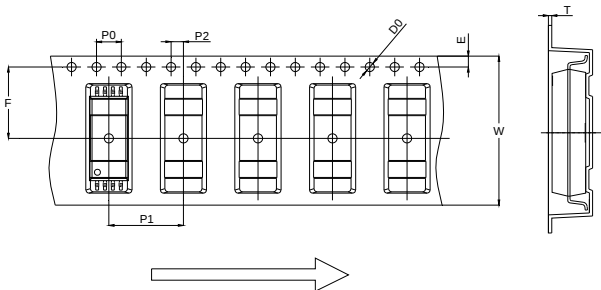
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option None



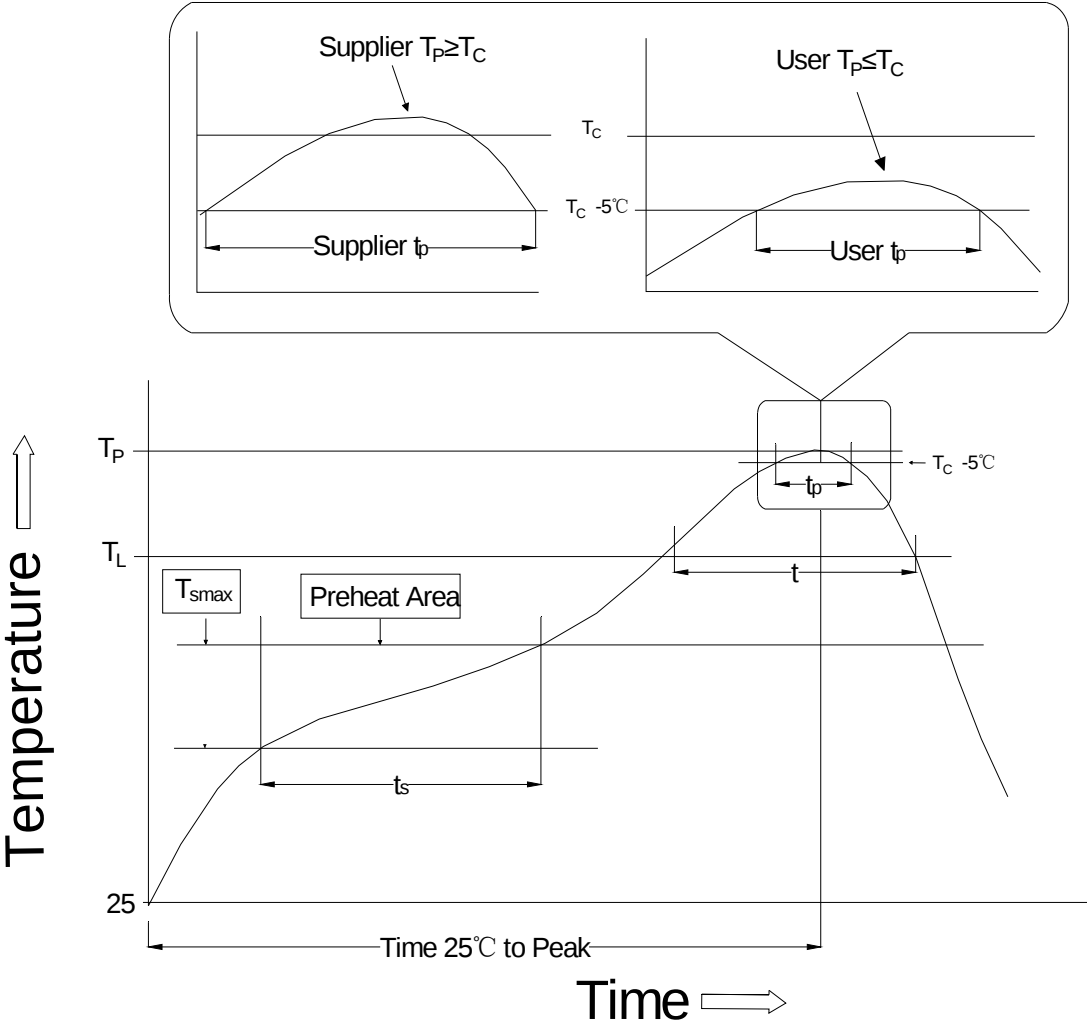
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	11.40	11.50	11.60	0.449	0.453	0.457
T	0.35	0.40	0.45	0.014	0.016	0.018
W	23.70	24.00	24.30	0.933	0.945	0.957

Option R



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	11.40	11.50	11.60	0.449	0.453	0.457
T	0.35	0.40	0.45	0.014	0.016	0.018
W	23.70	24.00	24.30	0.933	0.945	0.957

REFLOW INFORMATION



Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.
2. Avoid direct contact between the epoxy body and any tools or surfaces exceeding its maximum storage temperature.
3. Application of pressure on the epoxy body is prohibited at elevated temperatures. In specific scenarios, any applied force must not exceed 2.5N.
4. Ensure the component has cooled to ambient temperature before proceeding with any subsequent manufacturing steps.
5. The component has a shelf life of one year when stored under standard conditions.
6. Recommend storage Temp.: 0~40°C;
Recommend storage humidity: <60%;
MSL level: MSL 1

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