MATELIGHT

MATELIGHT DCC
RELEASE

Product Specification
产品规格书

Customer Name:
客户名称 _____

Customer P/N:
客户料号 _____

Product Name:
产品名称 晶体管光耦

Product P/N:
产品型号 MT-816(ABCD)

Sending Date:
制定日期 2026/04/15

☐ **Technical Reference** 技术参考 ☐ **Sample** 样品 ■ **Mass Product** 量产供货

Customer approval 客户审核			**Supplier approval** 供方审核		
Approved 核准	**Audit** 确认	**Confirmation** 制作	**Approved** 核准	**Audit** 确认	**Confirmation** 制作
☐ **Qualified** 接受 ☐ **Disqualified** 不接受			**Date:** 日期：		

RoHS

ISO 9001

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE DEVICES

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Photocoupler Model No.: MT-816(ABCD)

Features:

- Current transfer ratio (50%~600% at IF=5mA; Vce=5V)
- High input-output isolation voltage(Viso= 5000Vrms)
- Response time (tr: typ.4 μs at VCE = 2 V, IC = 2 mA, RL = 100 Ω)
- ESD pass (HBM8000V/MM2000V)
- MSL class1
- Safety approval

  UL 1577

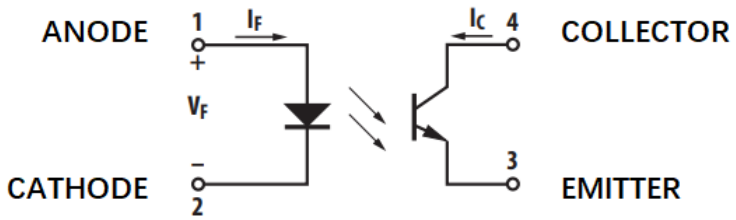
  VDE

- RoHS compliance

Applications:

- Hybrid substrates that require high density mounting
- Programmable controllers

Functional Diagram



Absolute Maximum Ratings (Ta=25℃)

	Parameter	Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	70	mW
	Peak Forward Current (100μs pulse, 100Hz frequency)	IFP	1	A
Output	Collector - Emitter Voltage	V_{CEO}	80	V
	Emitter - Collector Voltage	V_{ECO}	6	V
	Collector Current	I_C	50	mA
	Collector Power Dissipation	P_C	150	mW
	Total Power Dissipation	P_{tot}	200	mW
	Isolation Voltage	V_{iso}	5000	V_{rms}
	Operating Temperature	T_{opr}	-55~+110	℃
	Storage Temperature	T_{stg}	-55~+150	℃
	Soldering Temperature	T_{sol}	260	℃

AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method

(1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side

(2) The isolation voltage tester with zero-cross circuit shall be used

(3) The waveform of applied voltage shall be a sine wave

Electrical/Optical Characteristics (Ta=25℃)

	Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F=20mA	-	1.2	1.4	V
	Reverse Current	I_R	VR=4V	-	-	10	uA
	Terminal Capacitance	C_t	V=0, f=1KHz	-	30	250	pF
Output	Collector Dark Current	I_{CEO}	VCE=20V, IF=0			100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	IC=0.1mA, IF=0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	IE=10μA, IF=0	6	-	-	V
TRANSFER CHARACTERISTICS	Collector Current	I_C	IF=5mA, VCE=5V	2.5	-	30	mA
	*Current Transfer Ratio	CTR	IF=5mA, VCE=5V	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(Sat)}$	IF=20mA, IC=1mA	-	0.1	0.2	V
	Isolation Resistance	R_{iso}	DC500V, 40 ~ 60% R.H.	5×10^{10}	1×10^{11}	-	Ω
	Floating Capacitance	C_f	V=0, f=1MHz	-	0.6	1	pF
	Cut-off Frequency	f_C	VCE=5V, IC=2mA RL=100Ω,-3dB	-	80	-	kH_Z
	Response Time (Rise)	tr	VCE=2V, IC=2mA RL=100Ω	-	4	18	us
	Response Time (Fall)	tf		-	3	18	us

CTR=IC/IF*100%

CTR Rank	Min	Max	Condition
A	80	160	IF=5mA; Vce=5V
B	130	260	IF=5mA; Vce=5V
C	200	400	IF=5mA; Vce=5V
D3	300	450	IF=5mA; Vce=5V
D	300	600	IF=5mA; Vce=5V
None Or Other	50	600	IF=5mA; Vce=5V

CHARACTERISTICS CURVES

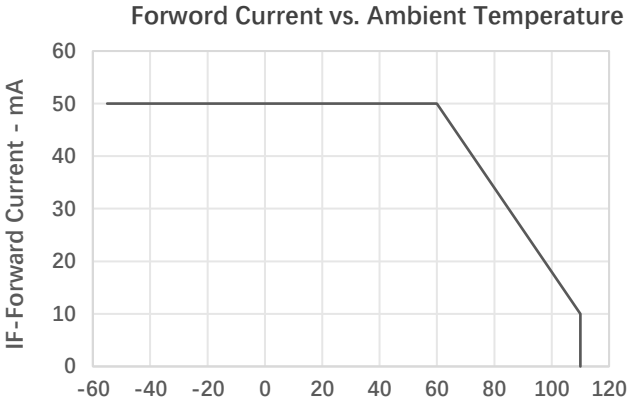


Figure 1. T_A-Ambient Temperature - ℃

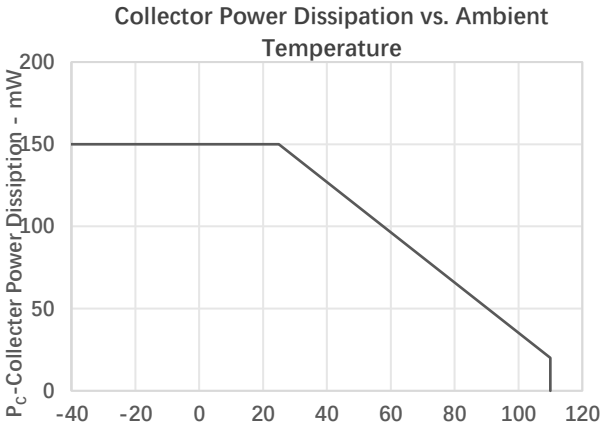


Figure 2. TA - Ambient Temperature - ℃

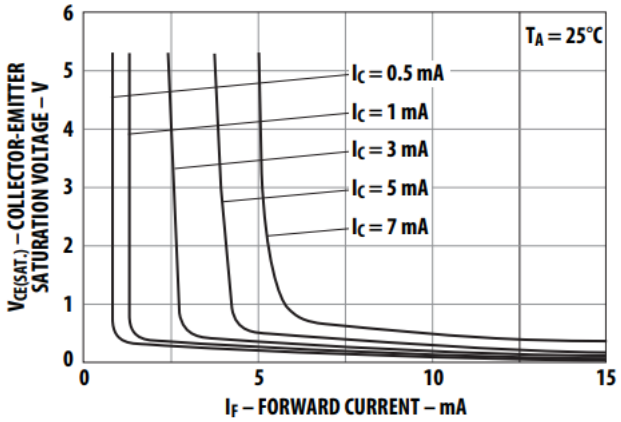


Figure 3. Collector-emitter saturation voltage vs. forward current.

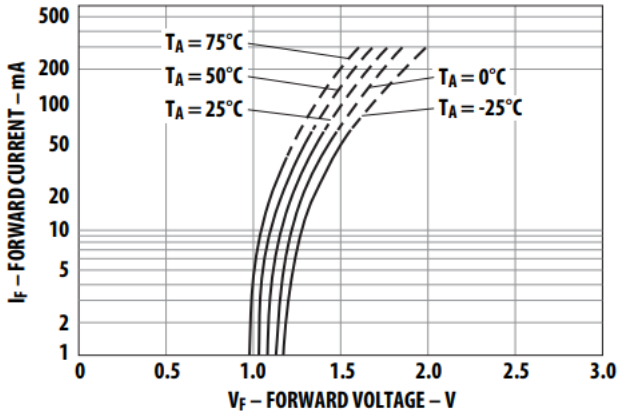


Figure 4. Forward current vs. forward voltage.

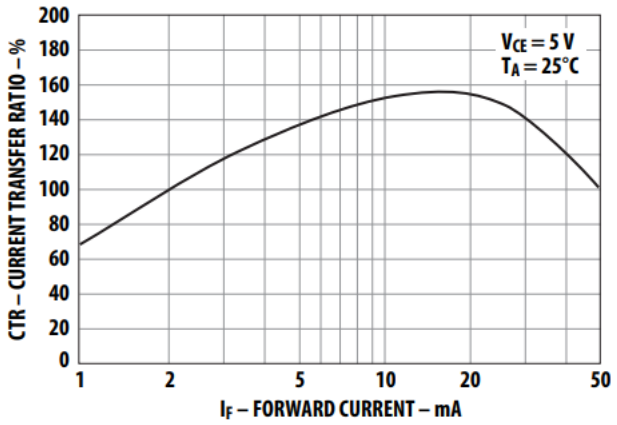


Figure 5. Current transfer ratio vs. forward current.

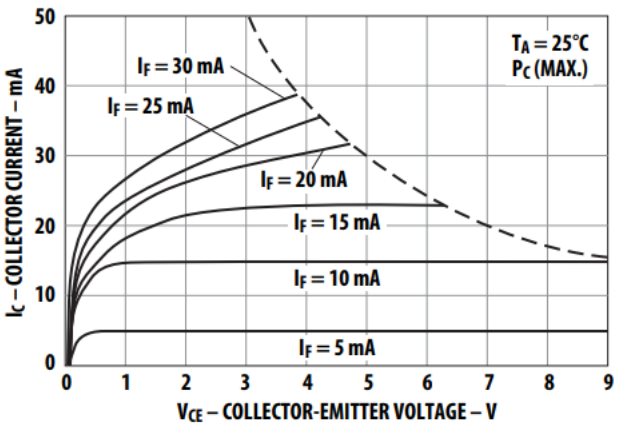


Figure 6. Collector current vs. collector-emitter voltage.

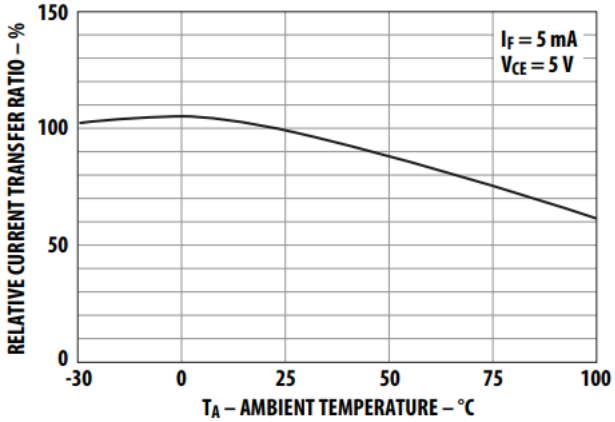


Figure 7. Relative current transfer ratio vs. temperature.

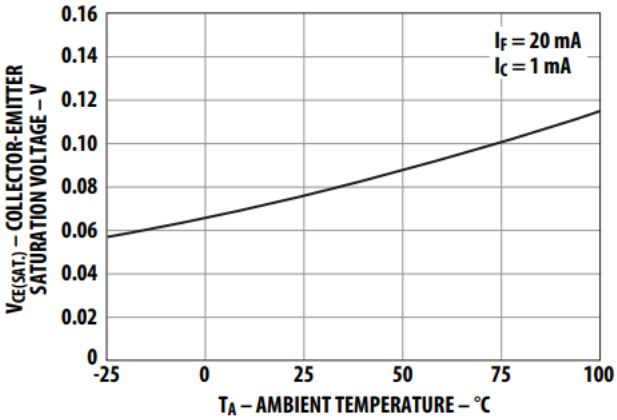


Figure 8. Collector-emitter saturation voltage vs. temperature.

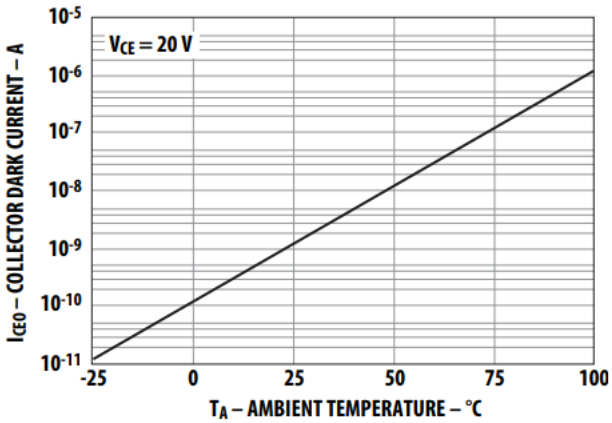


Figure 9. Collector dark current vs. temperature.

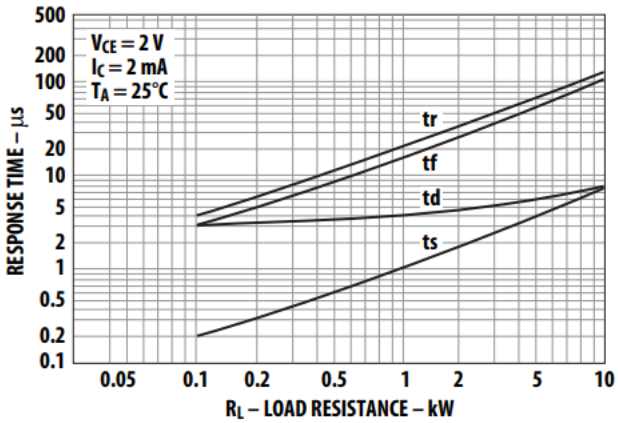


Figure 10. Response time vs. load resistance.

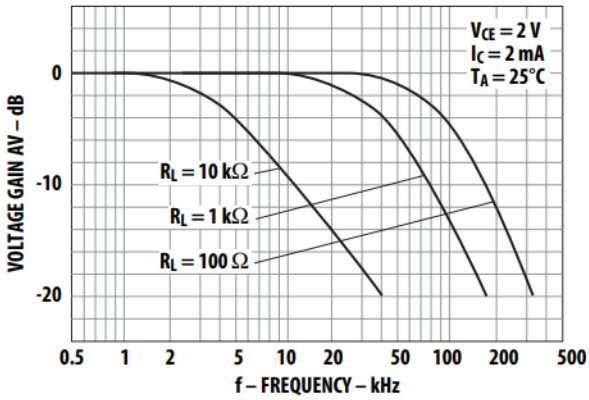
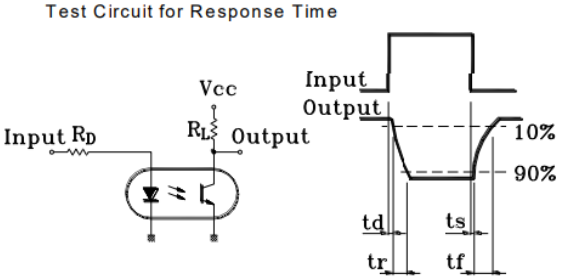
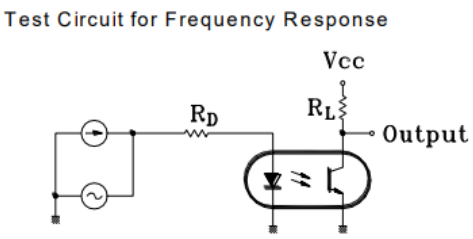


Figure 11. Frequency response.





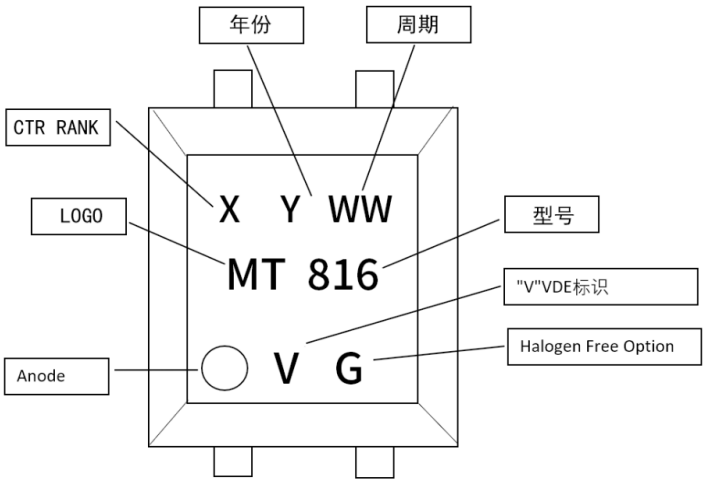
Naming Rule

MT-816-X-Y-WW-V-G

- MT---Logo
- 816---Part Number
- (X)---Representative: ABCD
- (Y)---Product Year
- (WW)---product lifecycle
- (V)---VDE
- (G)---halogen-free

Example:MT-816-X-Y-WW-V-G

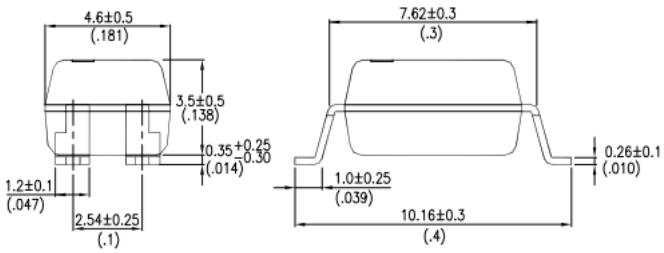
Marking



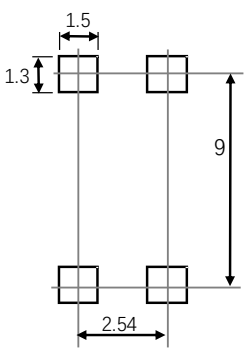
Package Dimensions

- “S”Type

Surface mount

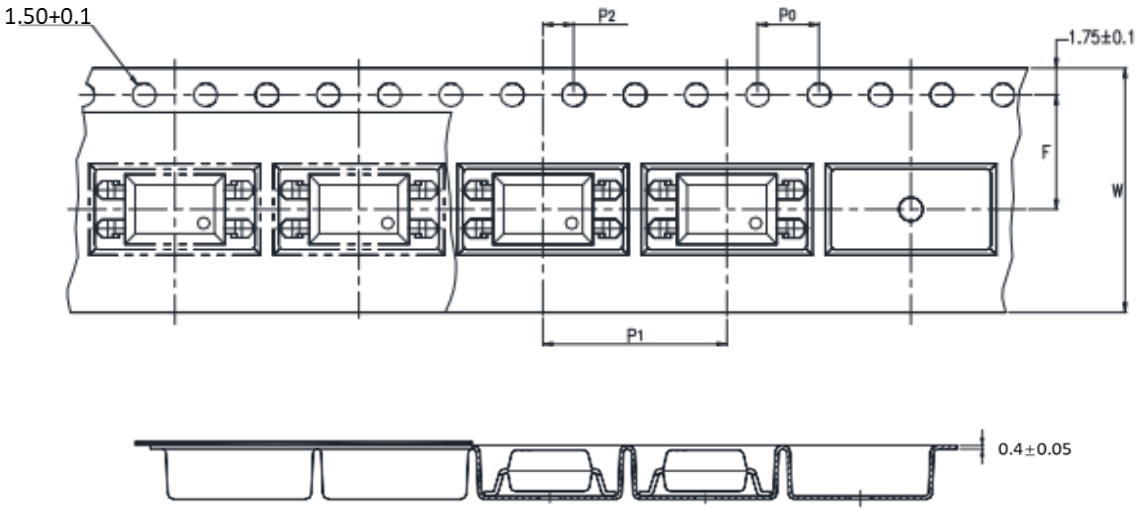


Surface mount (Footprint Dimensions)

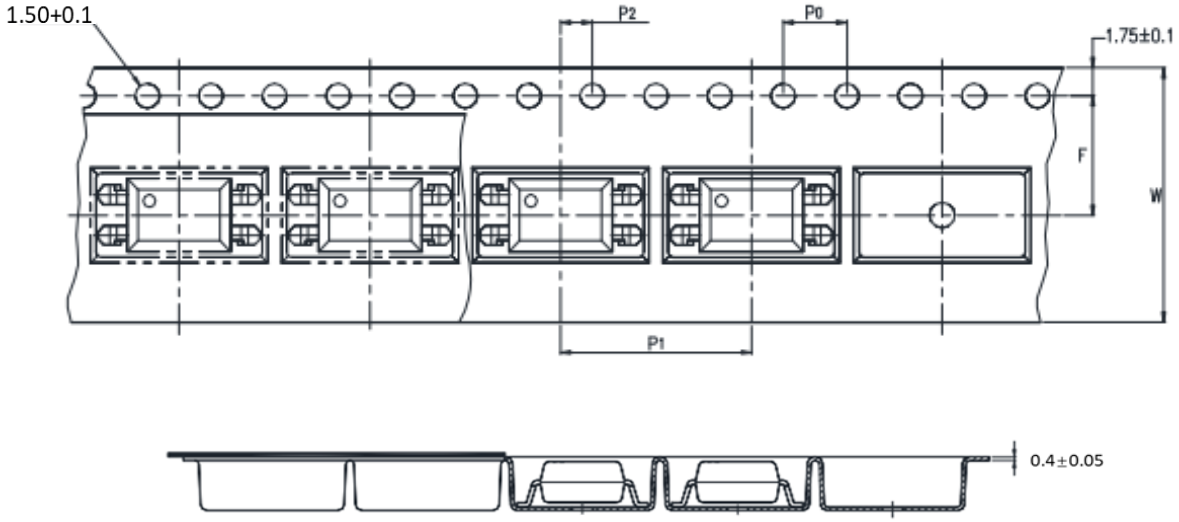


Carrier Tape Specifications

- "TA" Tape (1000 units per reel)



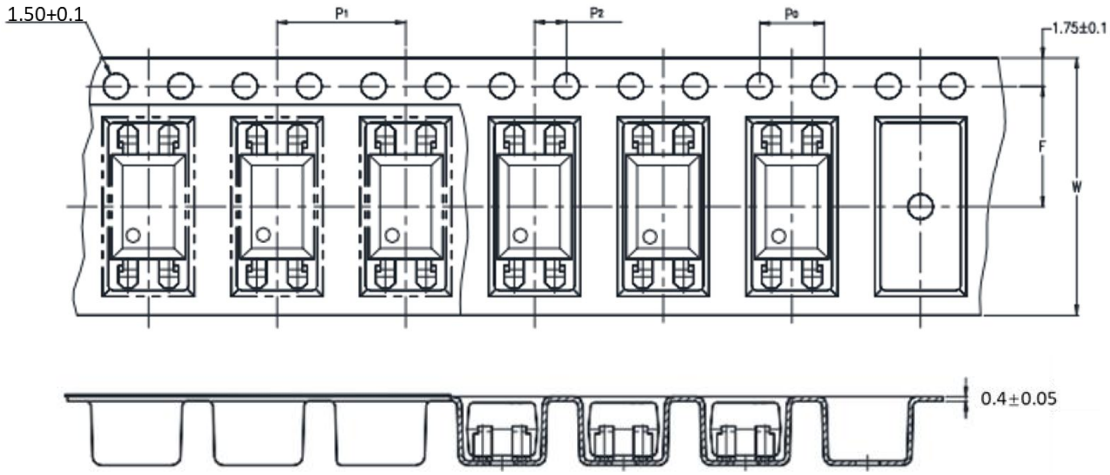
- "TA1" Tape (1000 units per reel)



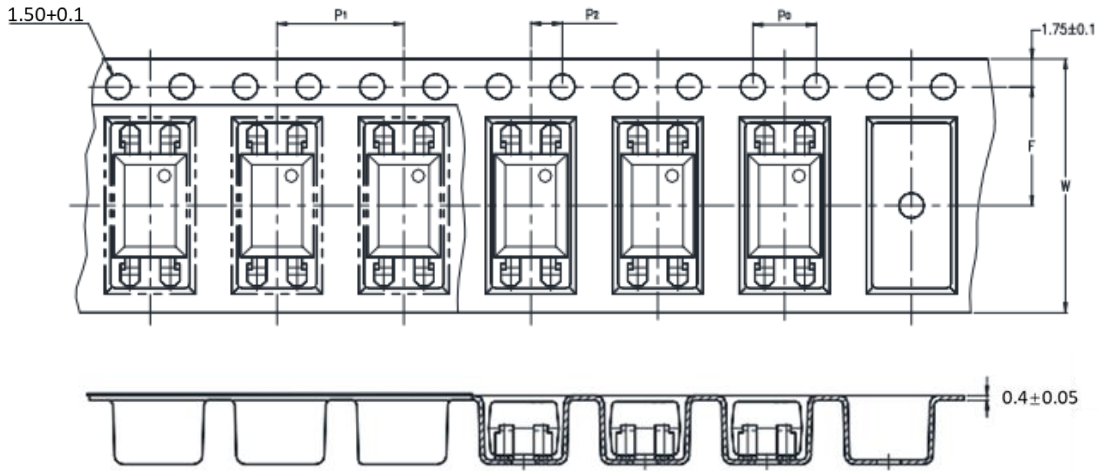
Symbol	Description	Dimensions in mm (inches)
W	Tape wide	16±0.3 (0.63)
P_0	Pitch of sprocket holes	4±0.1 (0.15)
F	Distance of compartment	7.5±0.1 (0.295)
P_2		2±0.1 (0.079)
P_1	Distance of compartment to compartment	12±0.1 (0.472)

Carrier Tape Specifications

- "TP" Tape (2000 units per reel)

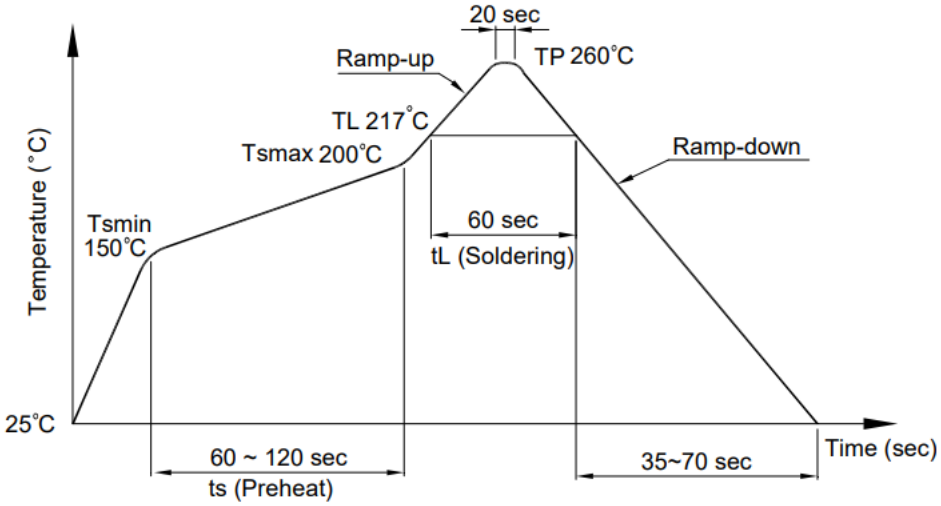


- "TP1" Tape (2000 units per reel)



Symbol	Description	Dimensions in mm (inches)
W	Tape wide	16±0.3 (0.63)
P_0	Pitch of sprocket holes	4±0.1 (0.15)
F	Distance of compartment	7.5±0.1 (0.295)
P_2		2±0.1 (0.079)
P_1	Distance of compartment to compartment	8±0.1 (0.315)

Solder Reflow Temperature Profile (JEDEC-STD-020C compliant)

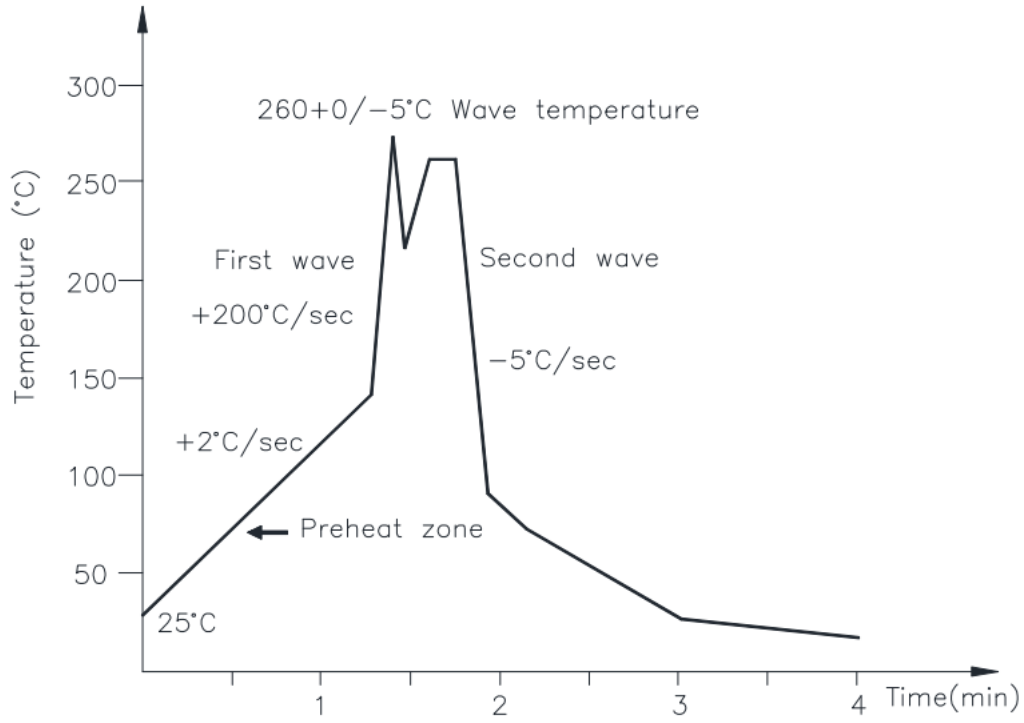


Profile Item	Conditions
Preheat	
- Temperature Min (T_{Smin})	150℃
- Temperature Max (T_{Smax})	200℃
- Time (min to max) (ts)	90±30 sec
Soldering zone	
- Temperature (T_L)	217℃
- Time (t_L)	60 sec
Peak Temperature (T_P)	260℃
Ramp-up rate	3℃ / sec max
Ramp down rate	3~6℃ / sec

One time soldering reflow is recommended within the condition of temperature and time profile shown

Do not solder more than three times

Wave Soldering (JEDEC22A111 compliant)



One time soldering is recommended within the condition of temperature

Temperature: 260+0/-5°C

Time: 10 sec

Preheat temperature:25 to 140°C

Preheat time: 30 to 80 sec