■ Features

- High isolation 3750 VRMS
- AC input with transistor output
- Operating temperature range - 55 °C to 100 °C
- RoHS & REACH Compliance
- Halogen free
- MSL class 1

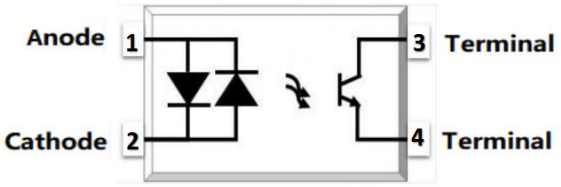
■ Applications

- Switch mode power supplies
- Programmable controllers
- Household appliances
- Office equipment

■ Description

The MP214 series combine two AlGaAs infrared emitting diode as the emitter which Is optically coupled to a silicon planar Phototransistor detector in a plastic SSOP4 Package With the robust coplanar double mold structure, MP214 series provide the most stable isolation feature.

■ Schematic



ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	VALUE	UNIT	NOTE
INPUT				
Forward Current	I_F	±60	mA	
Peak Forward Current	I_{FP}	±1	A	1
Input Power Dissipation	P_I	100	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	80	V	
Emitter - Collector Voltage	V_{ECO}	6	V	
Collector Current	I_C	50	mA	
Output Power Dissipation	P_O	150	mW	
COMMON				
Total Power Dissipation	Ptot	200	mW	
Isolation Voltage	Viso	3750	Vrms	2
Operating Temperature	Topr	-55~110	°C	
Storage Temperature	Tstg	-55~125	°C	
Soldering Temperature	Tsol	260	°C	

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

Note 2. For 10 seconds

ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C							
PARAMETER	SYMBOL	MIN	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	V_F	-	-	1.4	V	IF=10mA	
Input Capacitance	Cin	-	10	-	pF	V=0, f=1kHz	
OUTPUT							
Collector Dark Current	I_{CEO}	-	-	100	nA	VCE=20V, IF=0	
Collector-Emitter Breakdown Voltage	BV_{CEO}	80	-	-	V	IC=0.1mA, IF=0	
Emitter-Collector Breakdown Voltage	BV_{ECO}	6	-	-	V	IE=0.1mA, IF=0	
TRANSFER CHARACTERISTICS							
Current Transfer Ratio	MP214	CTR	20	-	400	%	IF=1mA, VCE=5V	
	MP214A		50	-	150			
	MP214B		80	-	400			
CTR Symmetry			0.7	-	1.3		IF=±1mA, VCE=5V	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	0.07	0.2	V	IF=20mA, IC=1mA	
Isolation Resistance	R_{ISO}	10^12	10^14	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	C_{IO}	-	0.4	1	pF	V=0, f=1MHz	
Response Time (Rise)	tr	-	7	18	μs	VCE=2V, IC=2mA RL=100Ω	3
Response Time (Fall)	tf	-	9	18	μs		3

Note 3. Fig.12&13

Note 4. Fig.14

CHARACTERISTIC CURVES

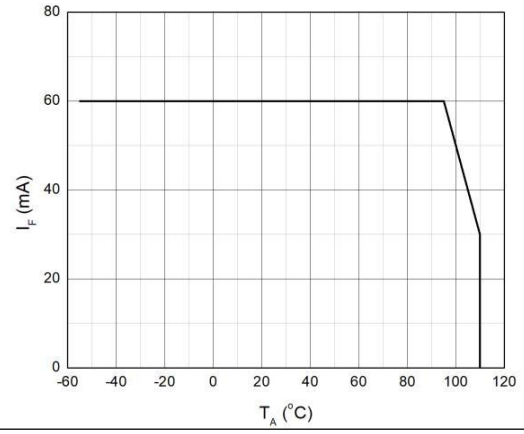


Fig.1 Forward Current vs. Ambient Temperature

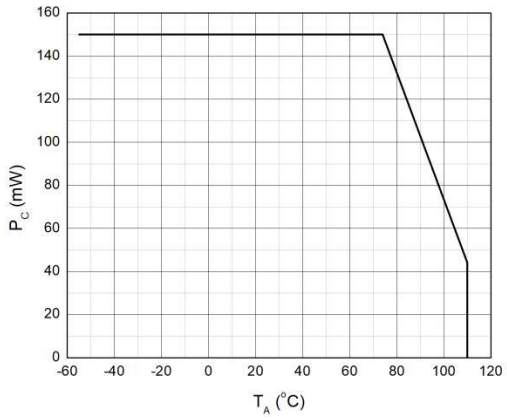


Fig.2 On-state Terminal Current vs. Ambient Temperature

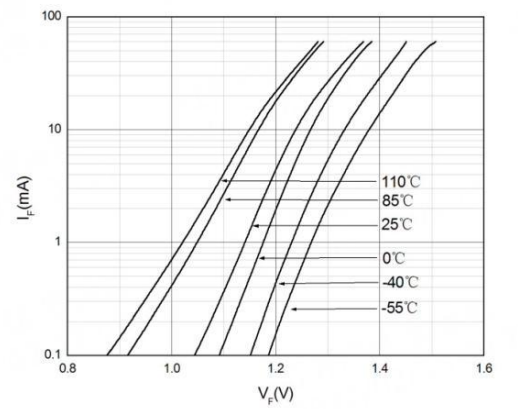


Fig.3 Forward Current vs. Forward Voltage

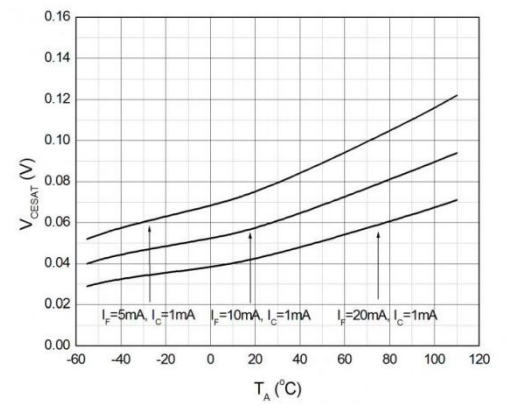


Fig.4 Off-state Terminal Current vs. Ambient Temperature

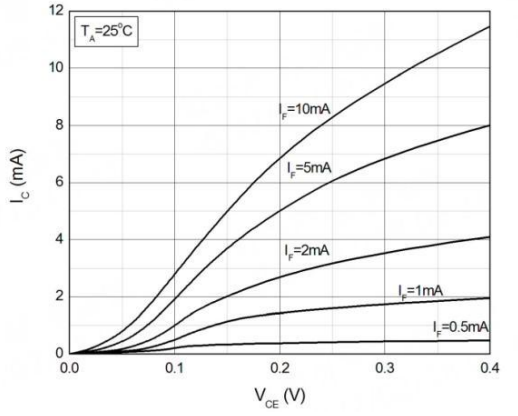


Fig.5 Collector Current vs. Collector-emitter Voltage

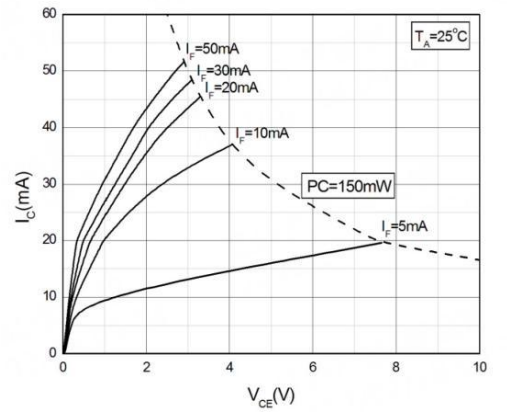


Fig.6Collector Current vs. Collector-emitter Voltage

CHARACTERISTIC CURVES

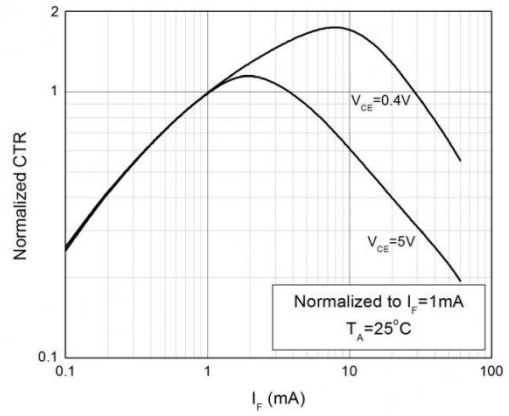


Fig.7Collector Dark Current vs. Ambient

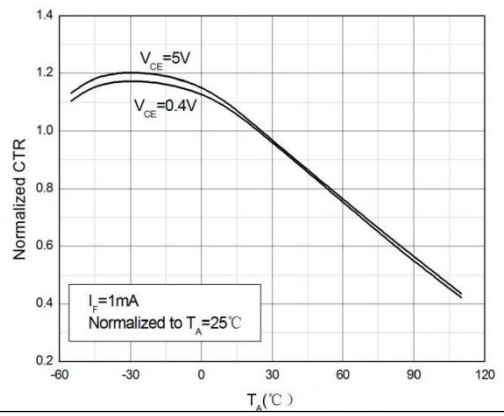


Fig.8 Switching Time vs. Load Resistance

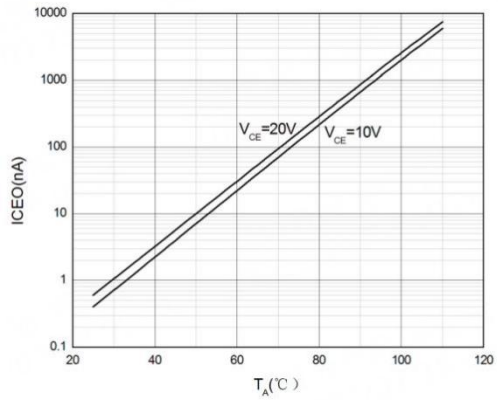


Fig.9 On-state Terminal Voltage vs. On-state Terminal Current

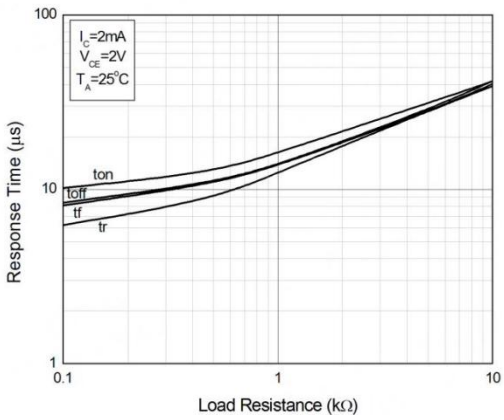


Fig.10 Holding Current vs. Ambient Temperature

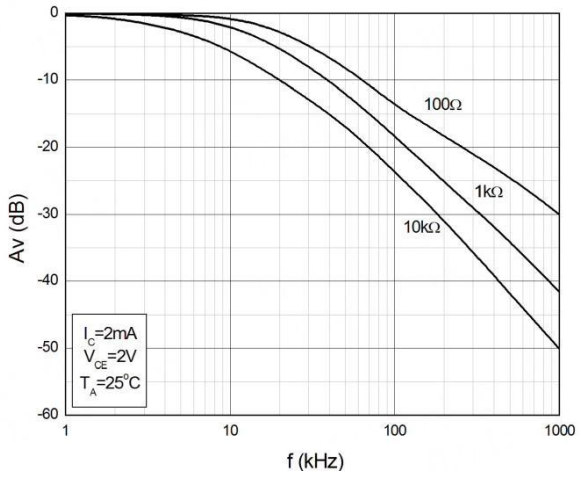


Fig.11 Frequency Respons

TEST CIRCUITS

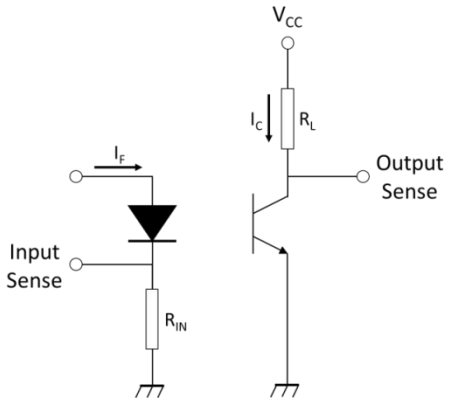


Fig.12 Test Circuits of Response Time

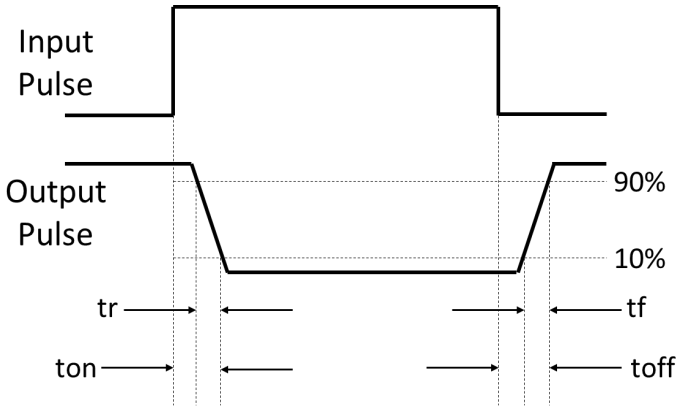


Fig.13 Curves of Response Time

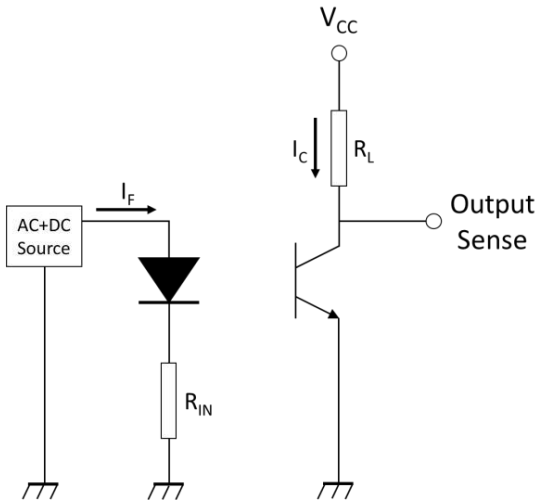
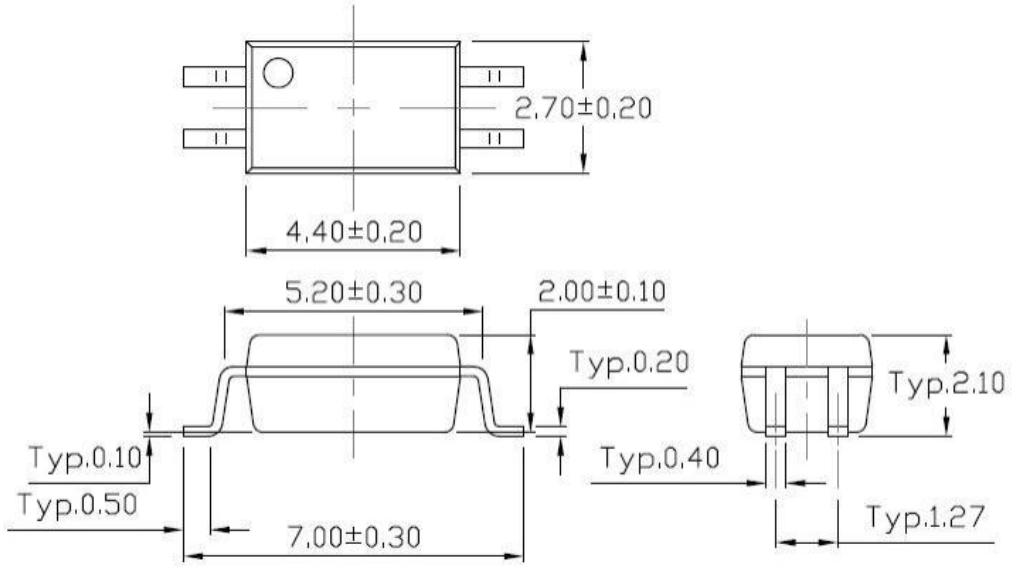
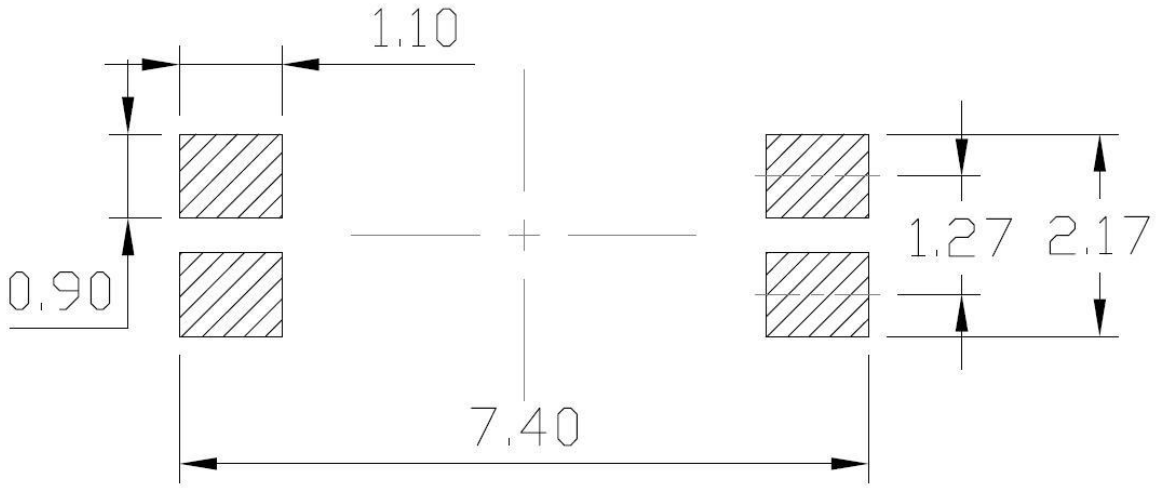


Fig.14 Test Circuits of Frequency Response

PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

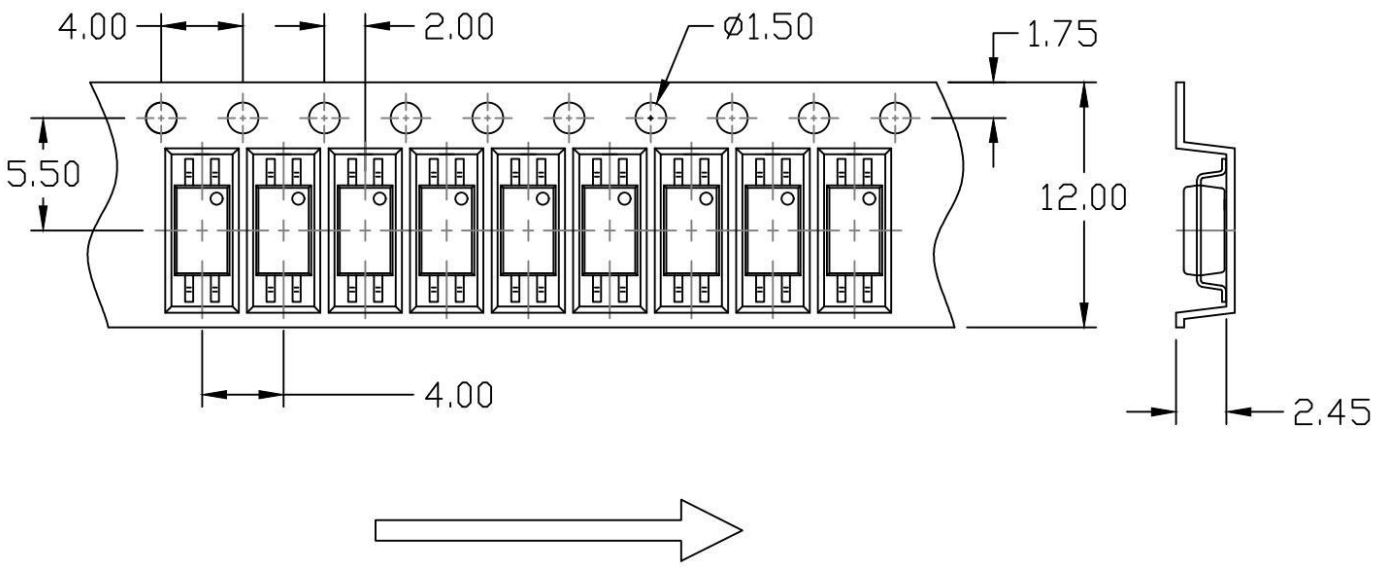


Recommended Solder Mask (Dimensions in mm unless otherwise stated)

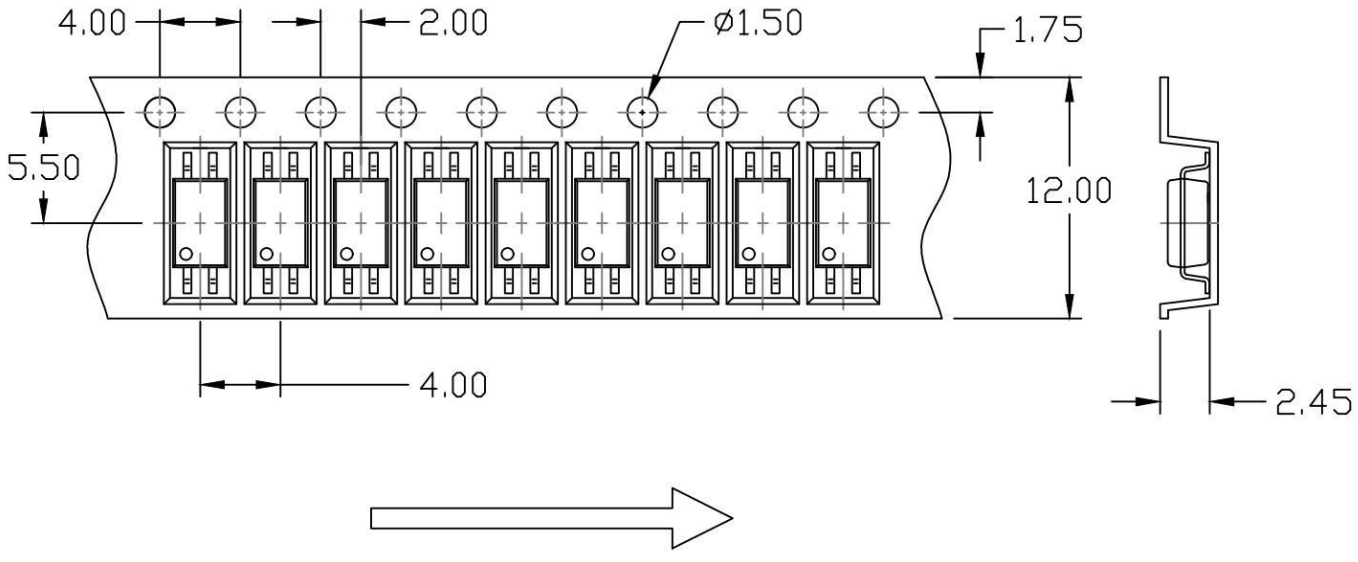


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option T1

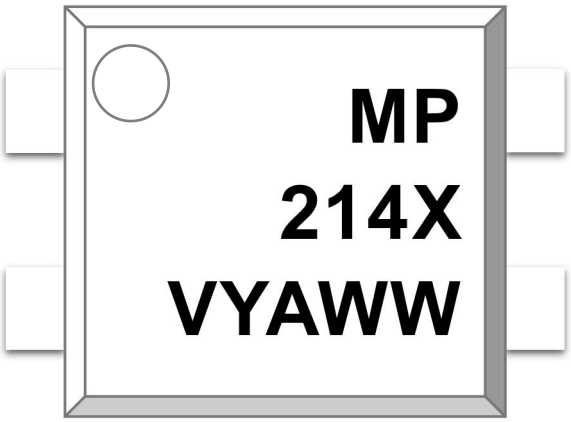


Option T2



ORDERING AND MARKING INFORMATION

MARKING INFORMATION



MP	:Company Abbr.
214X	:Part Number
V	:VDE Option
Y	:Fiscal Year
A	:Manufacturing Code
WW	:Work Week
X	:CTR Rank

ORDERING INFORMATION

MP214X(Z)-GV

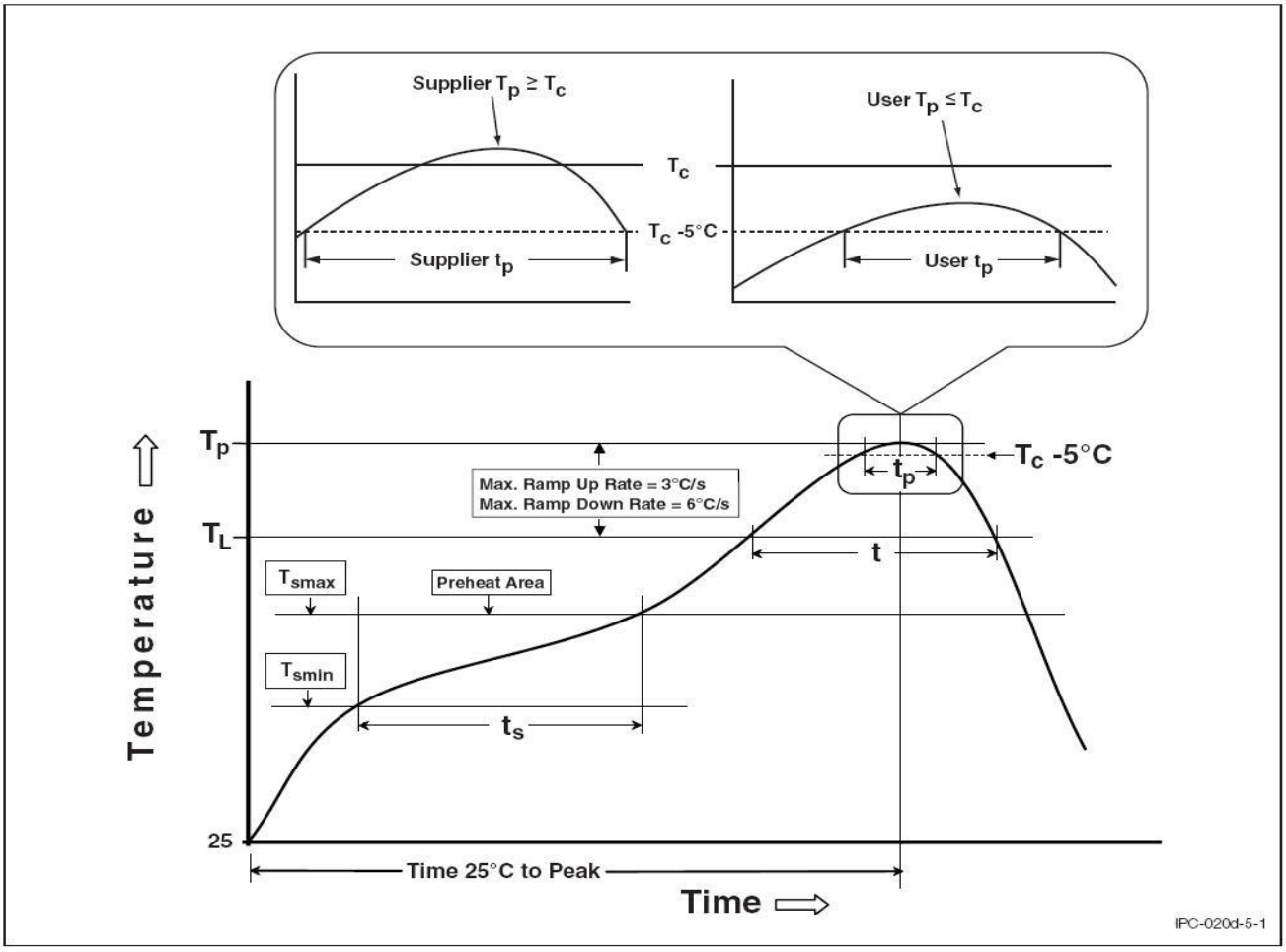
MP – Company Abbr.
214 – Par Number
X – Rank (A/B or None)
Z – Tape and Reel Option (T1/T2)
G – Material Option (G: Green, None: Non-Green)
V – VDE Option (V or None)

PACKING QUANTITY

Option	Quantity	Quantity – Inner box	Quantity – Inner box
T1	5000 Units/Reel	3 Reels/Inner box	3 Reels/Inner box
T2	5000 Units/Reel	3 Reels/Inner box	3 Reels/Inner box

REFLOW INFORMATION

REFLOW PROFILE



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

DISCLAIMER
● Our company is continually improving the quality, reliability, function and design. Our company reserves the right to make changes without further notices. ● The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed. ● This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death. ● Immerge unit's body in solder paste is not recommended. ● Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.

■ Revision History

Version	Date	Subjects (major changes since last revision)
0.1	2023-07-05	Datasheet Complete