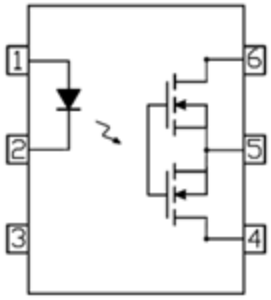
IS06, IS25, IS40, IS60

DESCRIPTION

The IS06, IS25, IS40 and IS60 are Single Channel Solid State Relays (Photo MOSFET) each consists of an infrared emitting diode optically coupled to a high voltage output detector. The detector consists of a Photo Voltaic Diode Array and high voltage output MOSFETs. The Solid State Relay can be configured to have AC/DC or DC only operation.

This Single Channel Output configuration is equivalent to 1 Form A of Electro-mechanical Relay.



FEATURES

- Normally Open Single Pole Single Throw Relay
- High Output Voltages 60V to 600V
- Low ON Resistance
- Low Operating Current
- High AC Isolation Voltage 5000V_{RMS}
- Wide Operating Temperature Range
- -40°C to 85°C
- Pb Free and RoHS Compliant
- Safety Approvals Pending

APPLICATIONS

- Industrial Controls
- Telephone/Exchange Equipment
- Measurement Equipment
- FA/OA Equipment
- Security System
- Reed Relay Replacement

ORDER INFORMATION

- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount,
- Add SMT&R after PN for Surface Mount Tape & Reel

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Input Diode

Forward Current	50mA
Reverse Voltage	5V
Forward Peak Current (f=100Hz, Duty Cycle = 0.1%)	1A
Power dissipation	75mW

Output

	IS06	IS25	IS40	IS60
Output Breakdown Voltage V_L (V)	60	250	400	600
Load Current I_L				
Continuous (mA)	550	180	120	50
Pulse (A) (100ms, 1 shot, V_L = DC)	1.2	0.5	0.3	0.15
Power Dissipation			500mW	

Total Package

Isolation Voltage (R.H. = 40% - 60%, 1 min)	5000$_{RMS}$
Total Power Dissipation	550mW
Operating Temperature	-40 to 85 °C
Storage Temperature	-40 to 125 °C
Lead Soldering Temperature (10s)	260°C

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Truth Table

Input	Output
ON	CLOSE
OFF	OPEN

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 10mA		1.18	1.5	V
Reverse Current	I_R	V_R = 5V			1	µA

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Off State Leakage Current	I_{leak}	I_F = 0mA, V_L = Max			1	µA
On Resistance		I_F = 5mA, I_L = Max, t = 1s				Ω
	$R_{d(ON)}$ A	IS06		0.75	2.5	
		IS25		6.5	15	
		IS40		20	30	
		IS60		42	70	
	$R_{d(ON)}$ B	IS06		0.4	1	
		IS25		3	5	
		IS40		14	20	
		IS60		30	50	
	$R_{d(ON)}$ C	IS06		0.2	0.5	
		IS25		1.5	3	
		IS40		7	15	
		IS60		15	30	

Note : $R_{d(ON)}$A, $R_{d(ON)}$B and $R_{d(ON)}$C are specified under corresponding Connection Types.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

OUTPUT

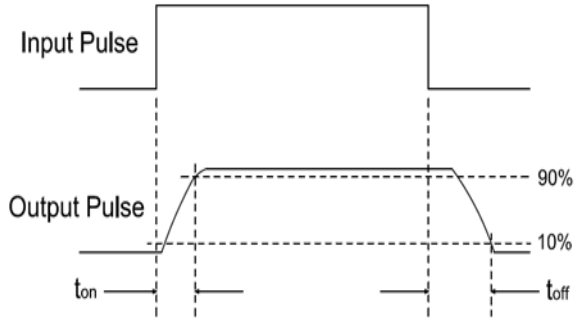
Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Output Capacitance	C_{out}	V_L = 0V, f = 1MHz				pF
		IS06		85		
		IS25		60		
		IS40		45		
		IS60		30		

COUPLED

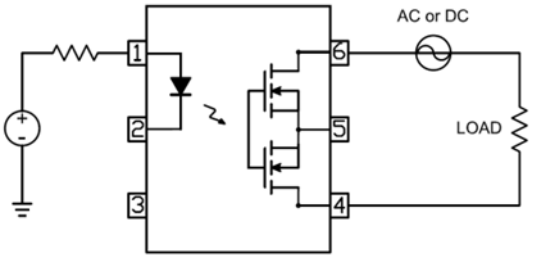
Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
LED Turn On Current	$I_{F(on)}$	I_L = Max		1.5	3	mA
LED Turn Off Current	$I_{F(off)}$	I_L = Max	0.4	1.5		mA
Turn On Time	T_{on}	I_F = 10mA, I_L = Max, R_L = 200Ω				ms
		IS06		1.3	3	
		IS25		1	3	
		IS40		0.35	3	
		IS60		1	3	
Turn Off Time	T_{off}	I_F = 10mA, I_L = Max, R_L = 200Ω				ms
		IS06		0.1	0.5	
		IS25		0.1	0.5	
		IS40		0.1	0.5	
		IS60		0.1	0.5	
Isolation Resistance	R_{I-O}	V_{I-O} = 500VDC	5×10^{10}			Ω
Isolation Capacitance	C_{I-O}	V = 0V, f = 1MHz		1.5		pF

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Turn on / Turn off Time



Connection A



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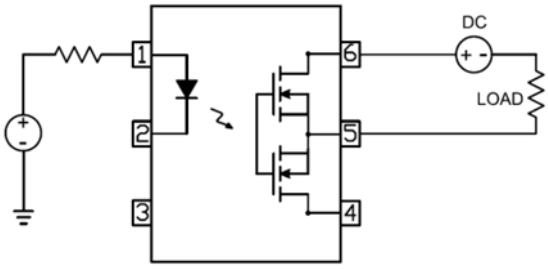
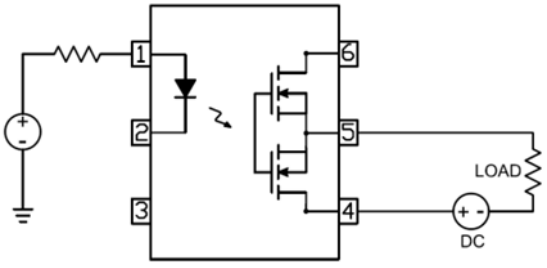
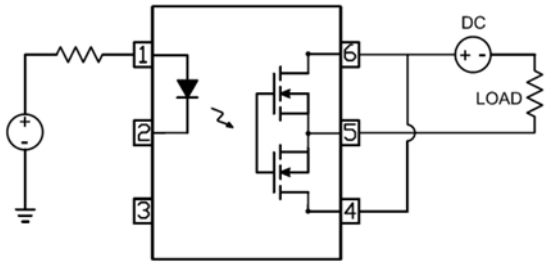




Connection C



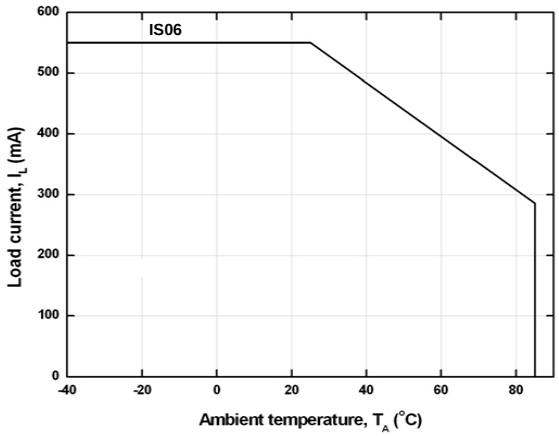


Fig 1a Load Current vs Ambient Temperature

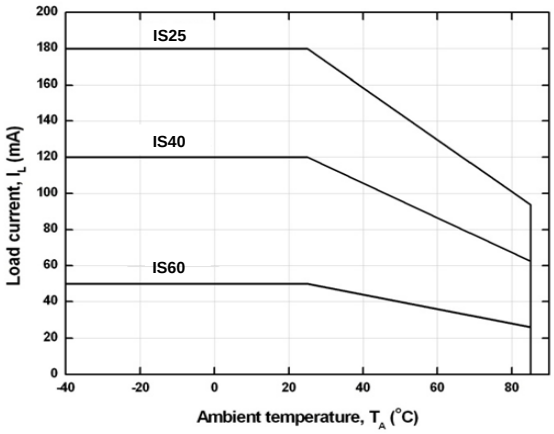


Fig 1b Load Current vs Ambient Temperature

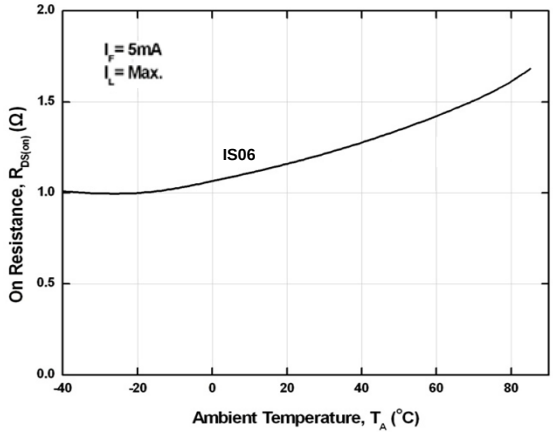


Fig 2a On Resistance vs Ambient Temperature

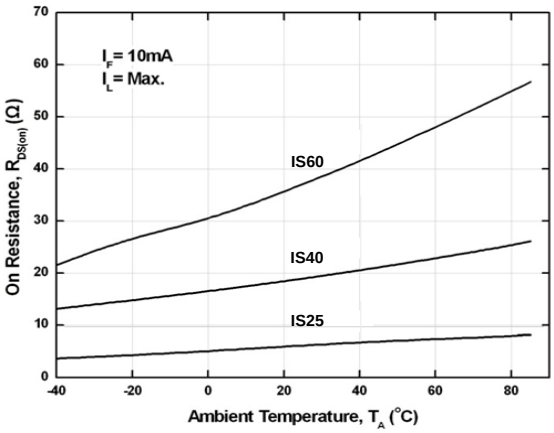


Fig 2b On Resistance vs Ambient Temperature

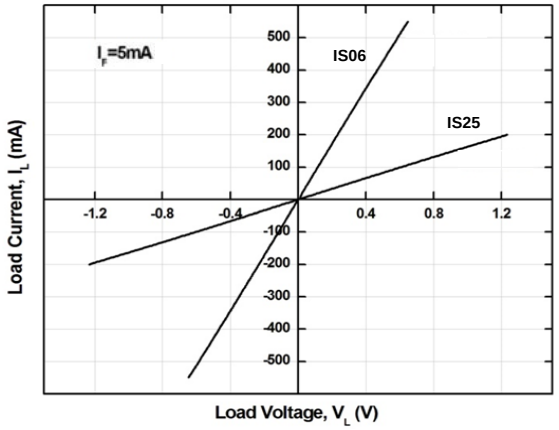


Fig 3a Load Current vs Load Voltage

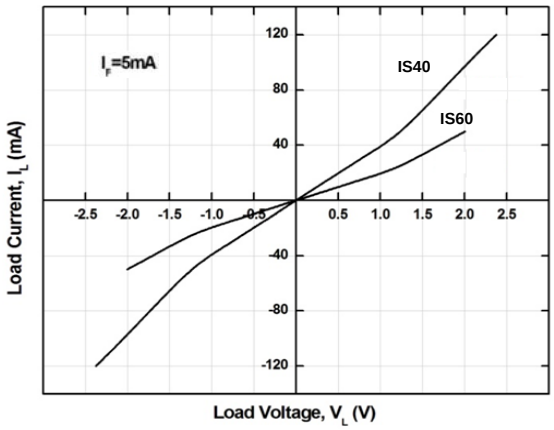


Fig 3b Load Current vs Load Voltage

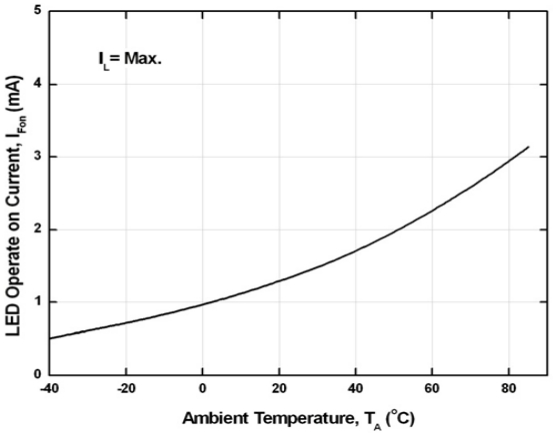


Fig 4 LED Turn On Current vs T_A

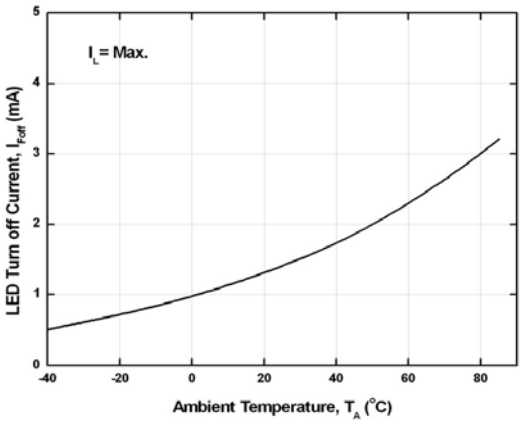


Fig 5 LED Turn Off Current vs T_A

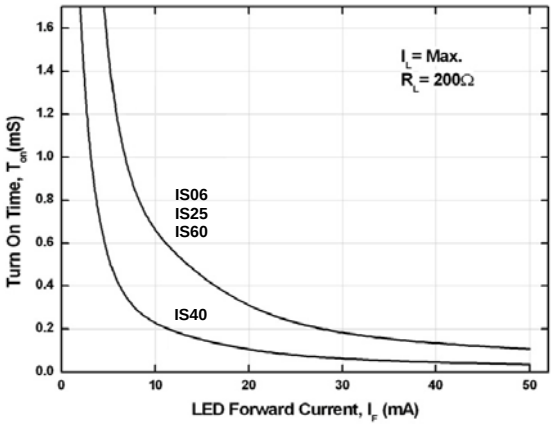


Fig 6 Turn On Time vs LED Forward Current

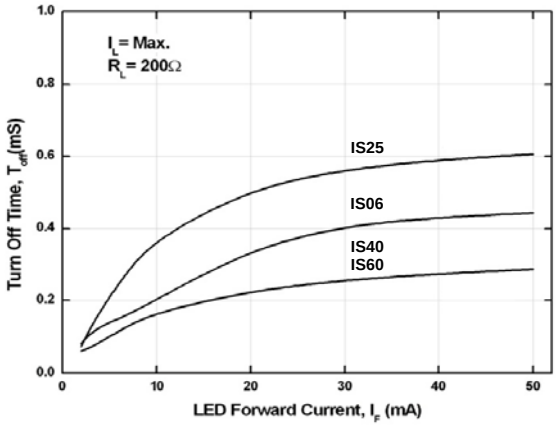


Fig 7 Turn Off Time vs LED Forward Current

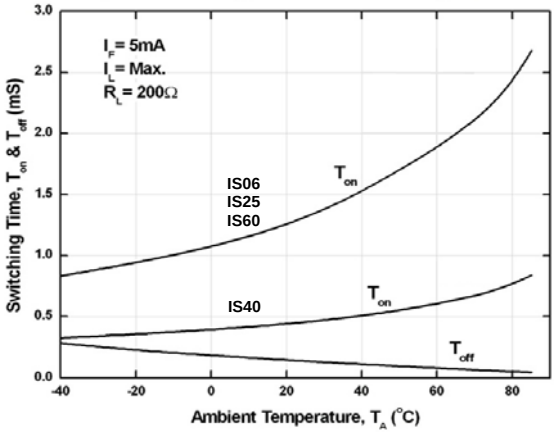


Fig 8 Switching Time vs Ambient Temperature

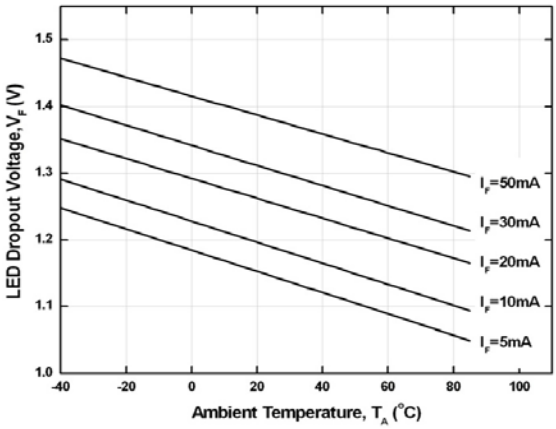


Fig 9 LED Dropout Voltage vs T_A

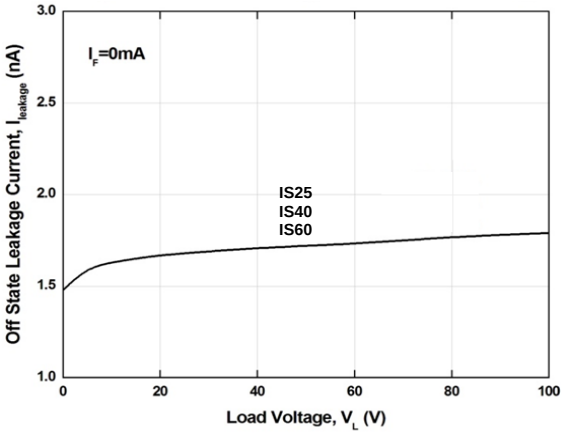


Fig 10 Off State Leakage Current vs Load Voltage

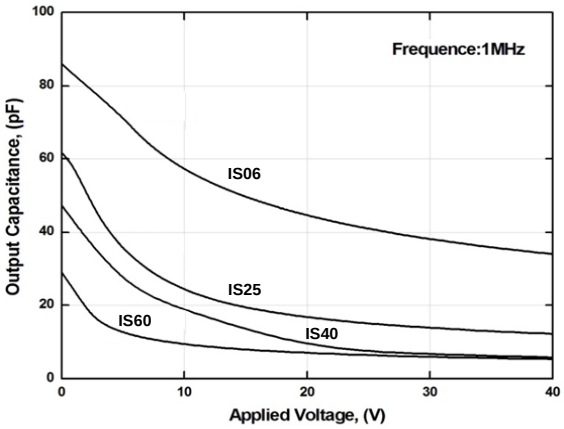
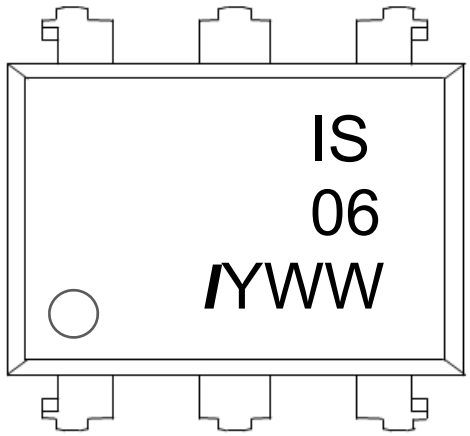


Fig 11 Output Capacitance vs Applied Voltage

ORDER INFORMATION

IS06, IS25, IS40, IS60			
After PN	**PN**	**Description**	**Packing quantity**
None	IS06, IS25, IS40, IS60	Standard DIP6	65 pcs per tube
G	IS06G, IS25G, IS40G, IS60G	10mm Lead Spacing	65 pcs per tube
SM	IS06SM, IS25SM, IS40SM, IS60SM	Surface Mount	65 pcs per tube
SMT&R	IS06SMT&R, IS25SMT&R, IS40SMT&R, IS60SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

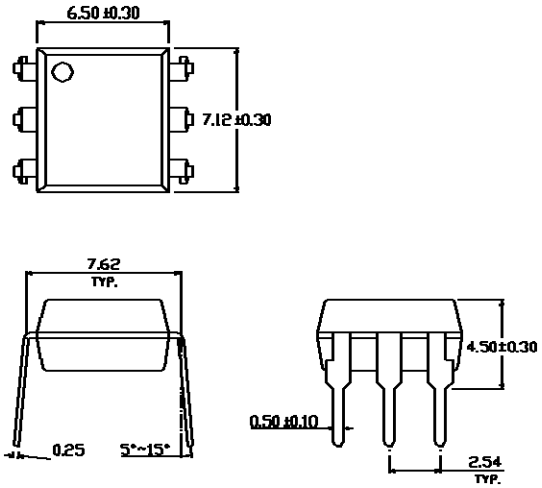
DEVICE MARKING



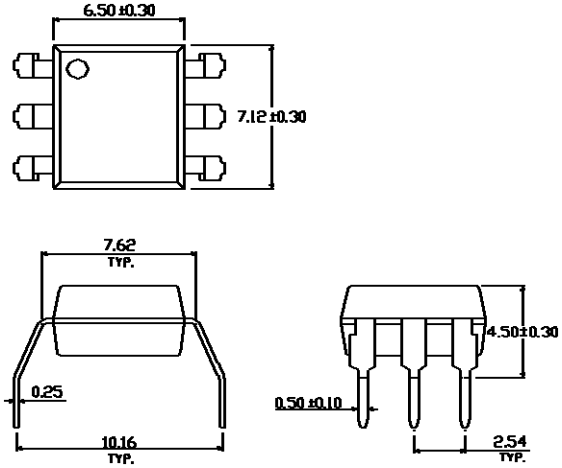
IS06 denotes Device Part Number (IS06 is used as example)
I denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code

PACKAGE DIMENSIONS (mm)

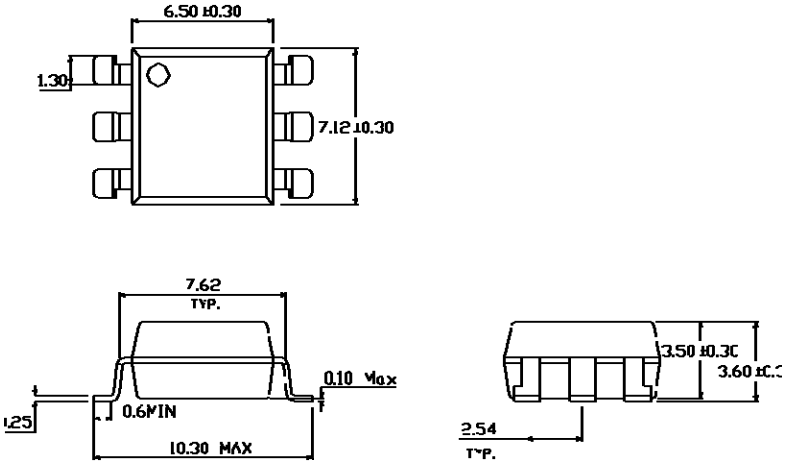
DIP



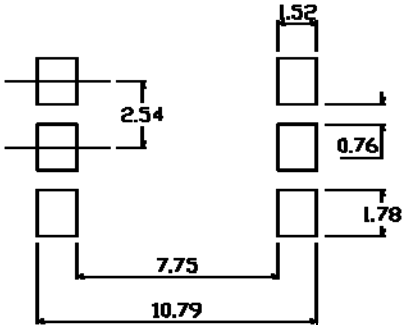
G Form



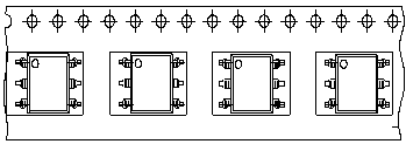
SMD



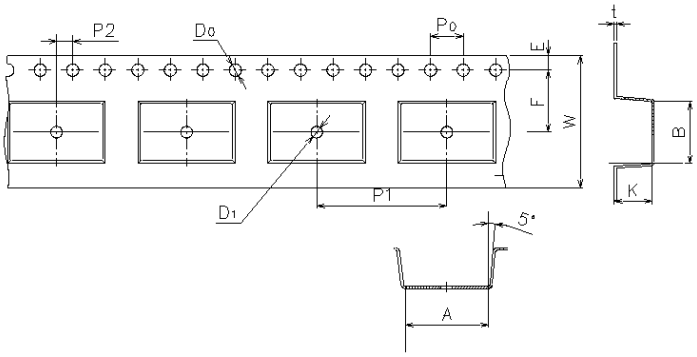
RECOMMENDED PAD LAYOUT FOR SMD (mm)



TAPE AND REEL PACKAGING

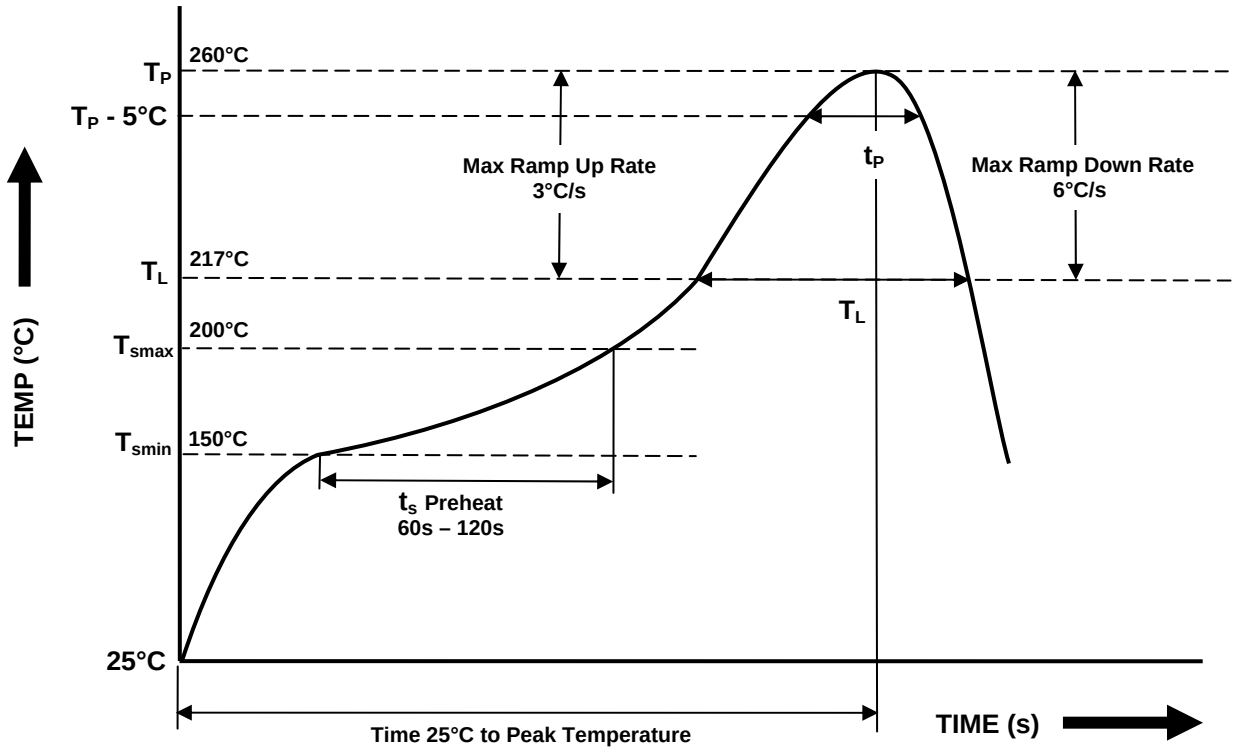


Direction of feed from reel



Dimension No.	A	B	Do	D1	E	F
Dimension (mm)	10.4±0.1	7.5±0.1	1.5±0.1	1.5+0.1/-0	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension (mm)	4.0±0.15	12.0±0.1	2.0±0.1	0.35±0.03	16.0±0.2	4.5±0.1

IR REFLOW SOLDERING TEMPERATURE PROFILE
(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 217°C 30s 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

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- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.

- When requiring a device for any ”specific” application, please contact our sales for advice.

- The contents described herein are subject to change without prior notice.

- Do not immerse device body in solder paste.

ISOCOM
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