

ISP817, ISP827, ISP847

ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = 20\text{mA}$		1.2	1.4	V
Reverse Leakage	I_R	$V_R = 4\text{V}$			10	μA
Terminal Capacitance	C_t	$V = 0\text{V}, f = 1\text{KHz}$		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector–Emitter Breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$				V
		ISP817	80			
		ISP827 / ISP847	35			
Emitter–Collector Breakdown Voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0\text{mA}$	6			V
Collector–Emitter Dark Current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$			100	nA



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ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$	50		600	%
		Optional CTR Grades				
		GB	100		600	
		BL	200		600	
		GR	100		300	
		A	80		160	
		B	130		260	
		C	200		400	
		D	300		600	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}$, $I_C = 1\text{mA}$		0.1	0.2	V
Floating Capacitance	C_f	$V = 0\text{V}$, $f = 1\text{MHz}$		0.6	1	pF
Cut-Off Frequency	f_c	$V_{CE} = 5\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$, -3dB		80		kHz
Output Rise Time	t_r	$V_{CE} = 2\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$		4	18	μs
Output Fall Time	t_f			3	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input to Output Isolation Voltage	V_{ISO}	AC 1 minute, RH = 40% to 60% Note 1	5300			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	$V_{IO} = 500\text{V}$, RH = 40% to 60% Note 1	5×10^{10}	1×10^{11}		Ω

Note 1 : Measure with input leads shorted together and output leads shorted together.



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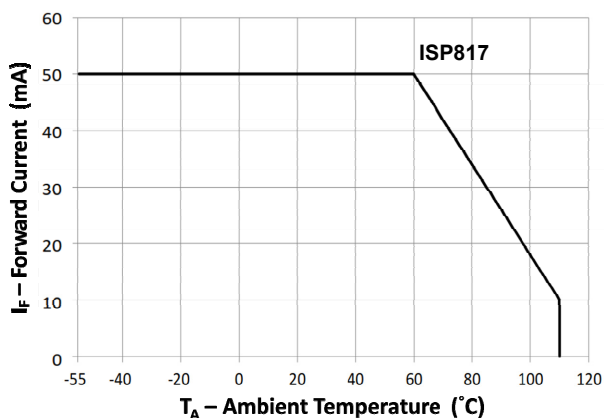


Fig 1 Forward Current vs Ambient Temperature (1)

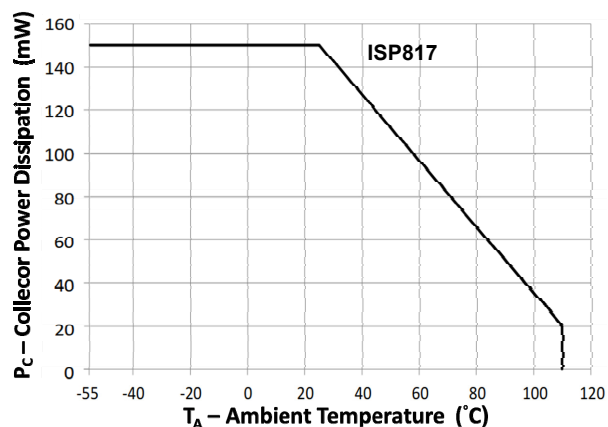


Fig 2 Collector Power Dissipation vs Ambient Temperature (1)

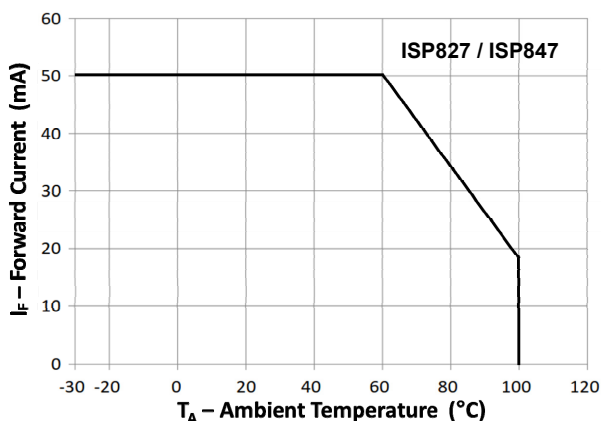


Fig 3 Forward Current vs Ambient Temperature (2)

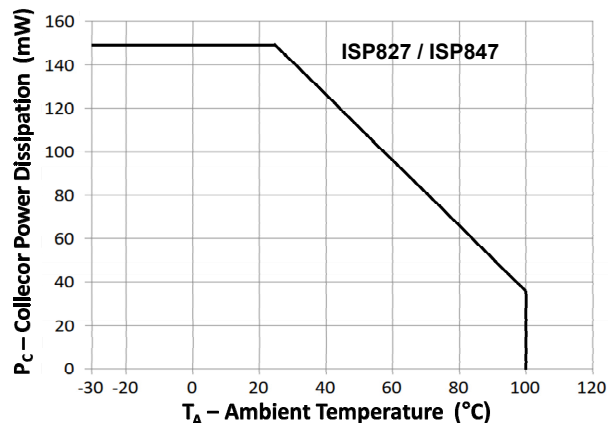


Fig 4 Collector Power Dissipation vs Ambient Temperature (2)

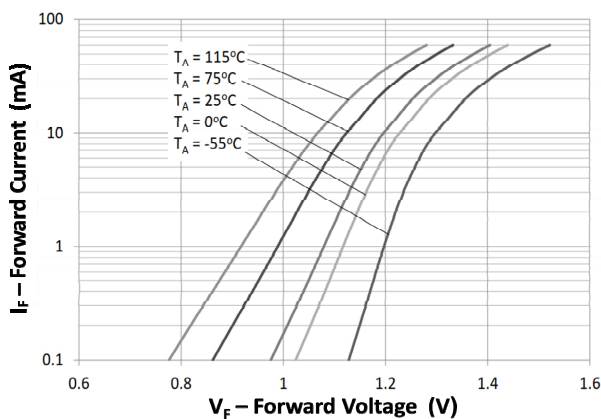


Fig 5 Forward Current vs Forward Voltage

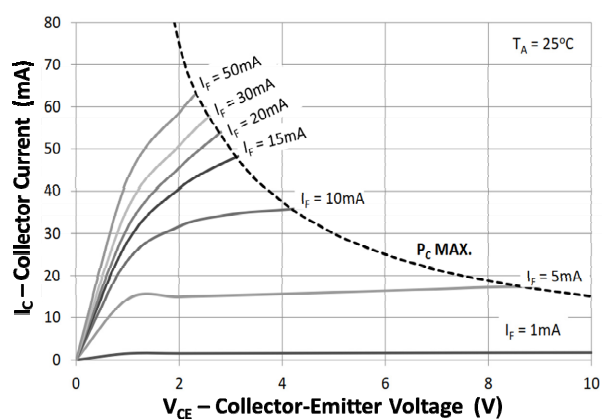


Fig 6 Collector Current vs Collector-Emitter Voltage



ISP817, ISP827, ISP847

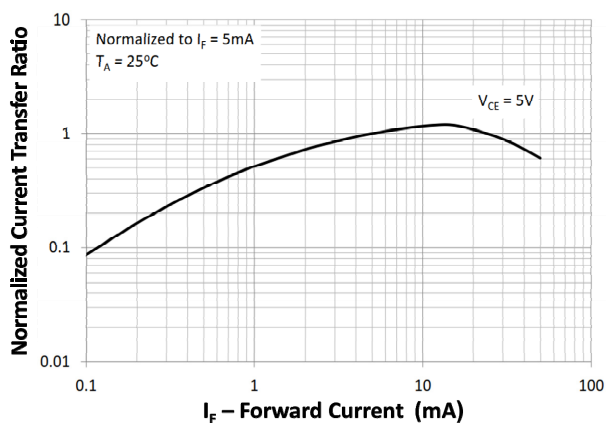


Fig 7 Normalized Current Transfer Ratio vs Forward Current

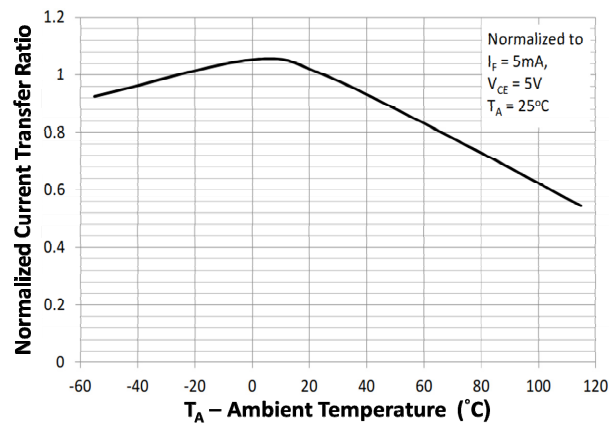


Fig 8 Normalized Current Transfer Ratio vs Ambient Temperature

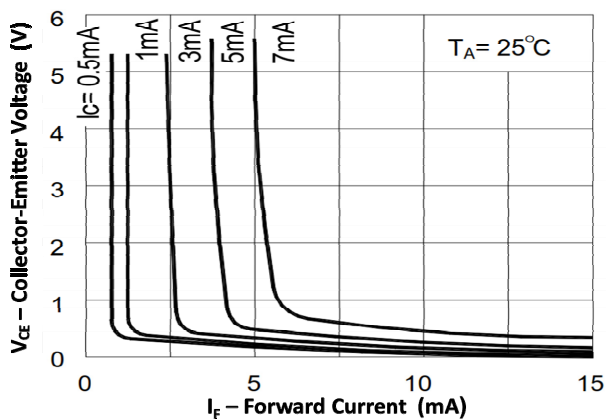


Fig 9 Collector-Emitter Voltage vs Forward Current

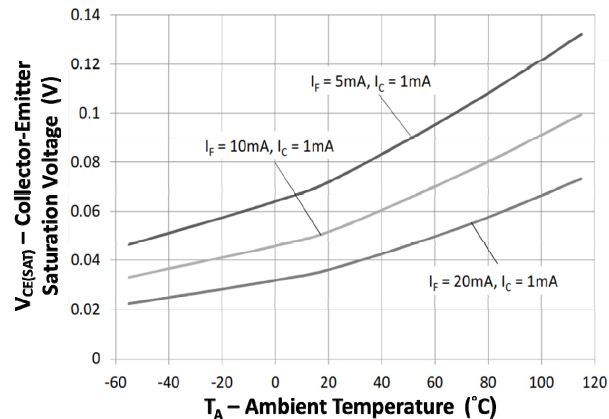


Fig 10 Collector-Emitter Saturation Voltage vs Ambient Temperature

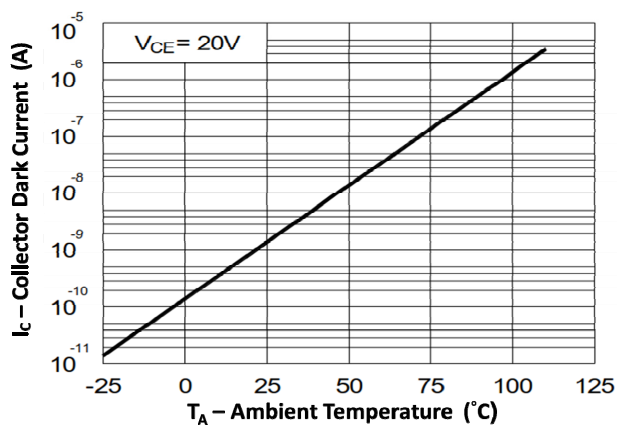


Fig 11 Collector Dark Current vs Ambient Temperature



ISP817, ISP827, ISP847

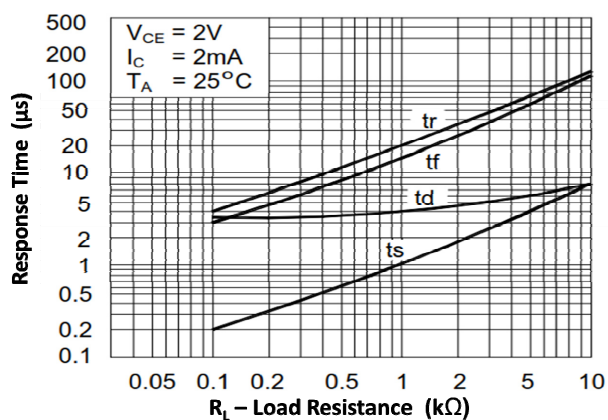
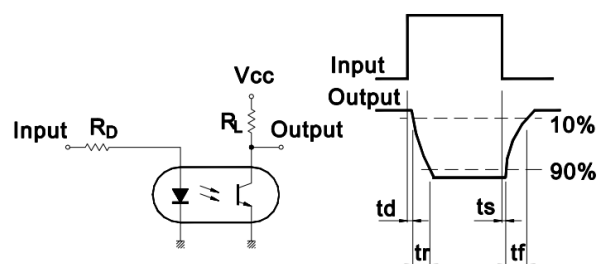


Fig 12 Response Time vs Load Resistance



Response Time Test Circuit

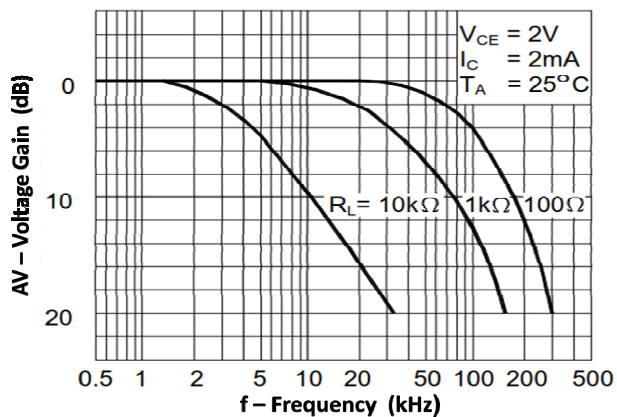
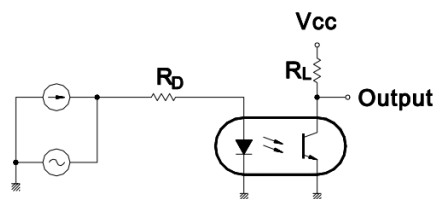


Fig 13 Frequency Response



Frequency Response Test Circuit

ISP817, ISP827, ISP847

ORDER INFORMATION

ISP817 (UL Approval)			
After PN	PN	Description	Packing quantity
None	ISP817, ISP817GB, ISP817BL, ISP817GR, ISP817A, ISP817B, ISP817C, ISP817D	Standard DIP4	100 pcs per tube
G	ISP817G, ISP817GBG, ISP817BLG, ISP817GRG, ISP817AG, ISP817BG, ISP817CG, ISP817DG	10mm Lead Spacing	100 pcs per tube
SM	ISP817SM, ISP817GBSM, ISP817BLSM, ISP817GRSM, ISP817ASM, ISP817BSM, ISP817CSM, ISP817DSM	Surface Mount	100 pcs per tube
SMT&R	ISP817SMT&R, ISP817GBSMT&R, ISP817GRSMT&R, ISP817BLSMT&R, ISP817ASMT&R, ISP817BSMT&R, ISP817CSMT&R, ISP817DSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

ISP827 (UL Approval)			
After PN	PN	Description	Packing quantity
None	ISP827, ISP827GB, ISP827BL, ISP827GR, ISP827A, ISP827B, ISP827C, ISP827D	Standard DIP8	50 pcs per tube
G	ISP827G, ISP827GBG, ISP827BLG, ISP827GRG, ISP827AG, ISP827BG, ISP827CG, ISP827DG	10mm Lead Spacing	50 pcs per tube
SM	ISP827SM, ISP827GBSM, ISP827BLSM, ISP827GRSM, ISP827ASM, ISP827BSM, ISP827CSM, ISP827DSM	Surface Mount	50 pcs per tube
SMT&R	ISP827SMT&R, ISP827GBSMT&R, ISP827GRSMT&R, ISP827BLSMT&R, ISP827ASMT&R, ISP827BSMT&R, ISP827CSMT&R, ISP827DSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

ISP847 (UL Approval)			
After PN	PN	Description	Packing quantity
None	ISP847, ISP847GB, ISP847BL, ISP847GR, ISP847A, ISP847B, ISP847C, ISP847D	Standard DIP16	25 pcs per tube
G	ISP847G, ISP847GBG, ISP847BLG, ISP847GRG, ISP847AG, ISP847BG, ISP847CG, ISP847DG	10mm Lead Spacing	25 pcs per tube
SM	ISP847SM, ISP847GBSM, ISP847BLSM, ISP847GRSM, ISP847ASM, ISP847BSM, ISP847CSM, ISP847DSM	Surface Mount	25 pcs per tube

**ISP817, ISP827, ISP847****ORDER INFORMATION**

ISP817X (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	ISP817X, ISP817XGB, ISP817XBL, ISP817XGR, ISP817XA, ISP817XB, ISP817XC, ISP817XD	Standard DIP4	100 pcs per tube
G	ISP817XG, ISP817XGBG, ISP817XBLG, ISP817XGRG, ISP817XAG, ISP817XBG, ISP817XCG, ISP817XDG	10mm Lead Spacing	100 pcs per tube
SM	ISP817XSM, ISP817XGBSM, ISP817XGRSM, ISP817XBLSM, ISP817XASM, ISP817XBXSM, ISP817XCSM, ISP817XDMSM	Surface Mount	100 pcs per tube
SMT&R	ISP817XSMT&R, ISP817XGBSMT&R, ISP817XGRSMT&R, ISP817XBLSMT&R, ISP817XASMT&R, ISP817XBSMT&R, ISP817XCSMT&R, ISP817XDSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

ISP827X (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	ISP827X, ISP827XGB, ISP827XBL, ISP827XGR, ISP827XA, ISP827XB, ISP827XC, ISP827XD	Standard DIP8	50 pcs per tube
G	ISP827XG, ISP827XGBG, ISP827XBLG, ISP827XGRG, ISP827XAG, ISP827XBG, ISP827XCG, ISP827XDG	10mm Lead Spacing	50 pcs per tube
SM	ISP827XSM, ISP827XGBSM, ISP827XGRSM, ISP827XBLSM, ISP827XASM, ISP827XBBSM, ISP827XCSM, ISP827XDMSM	Surface Mount	50 pcs per tube
SMT&R	ISP827XSMT&R, ISP827XGBSMT&R, ISP827XGRSMT&R, ISP827XBLSMT&R, ISP827XASMT&R, ISP827XBSMT&R, ISP827XCSMT&R, ISP827XDSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

ISP847 (UL and VDE Approvals)			
After PN	PN	Description	Packing quantity
None	ISP847X, ISP847XGBL, ISP847XBL, ISP847XGR, ISP847XA, ISP847XB, ISP847XC, ISP847XD	Standard DIP16	25 pcs per tube
G	ISP847XG, ISP847XGBG, ISP847XBLG, ISP847XGRG, ISP847XAG, ISP847XBG, ISP847XCG, ISP847XDG	10mm Lead Spacing	25 pcs per tube
SM	ISP847XSM, ISP847XGBSM, ISP847XGRSM, ISP847XBLSM, ISP847XASM, ISP847XBBSM, ISP847XCSM, ISP847XDMSM	Surface Mount	25 pcs per tube



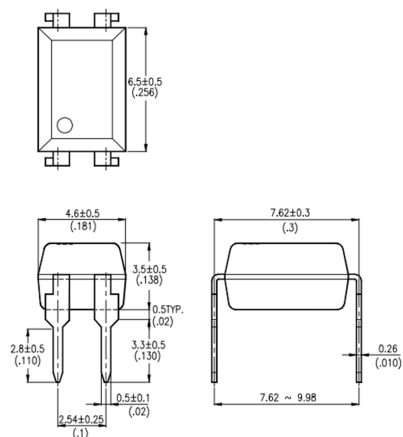
ISOCOM
COMPONENTS

ISP817, ISP827, ISP847

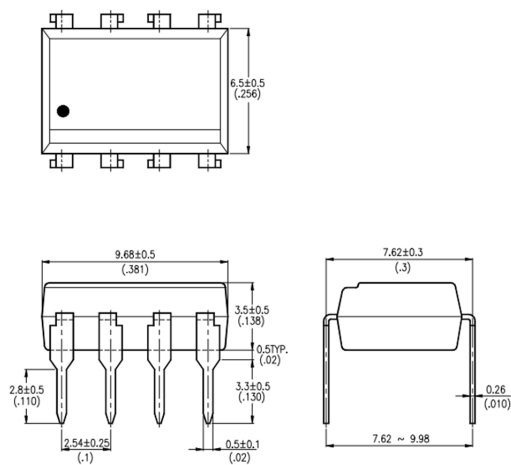
PACKAGE DIMENSIONS in mm (inch)

DIP

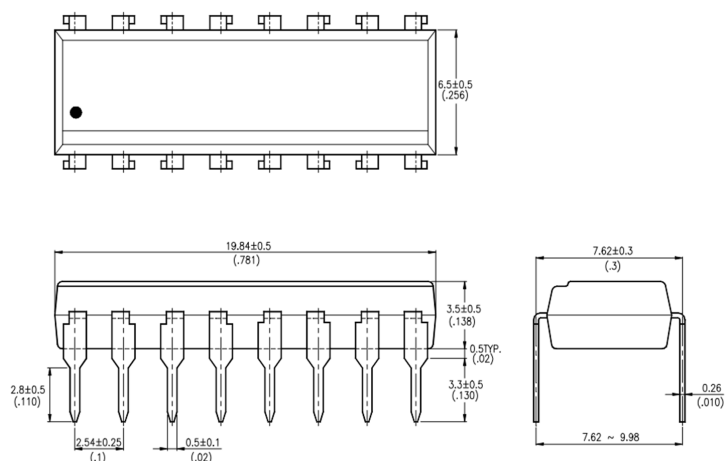
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ISP827



ISP847





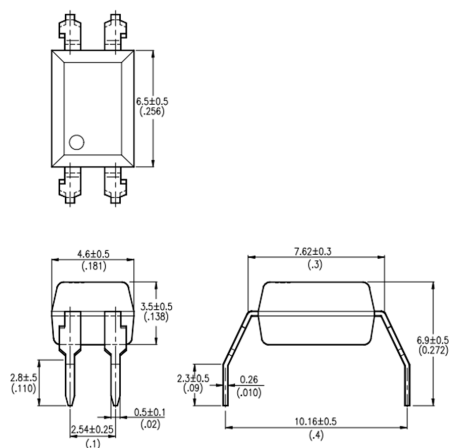
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COMPONENTS

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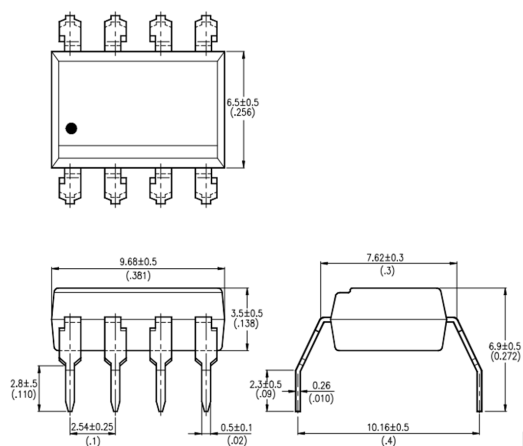
PACKAGE DIMENSIONS in mm (inch)

G Form

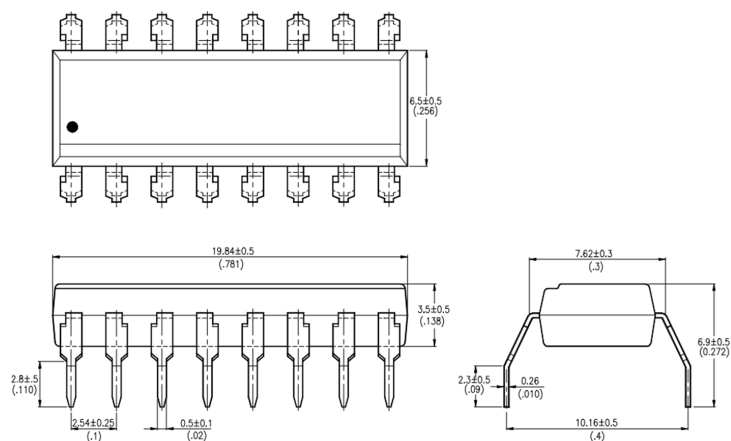
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ISP827G



ISP847G





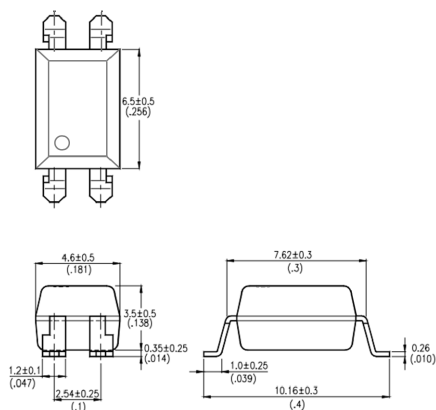
ISOCOM
COMPONENTS

ISP817, ISP827, ISP847

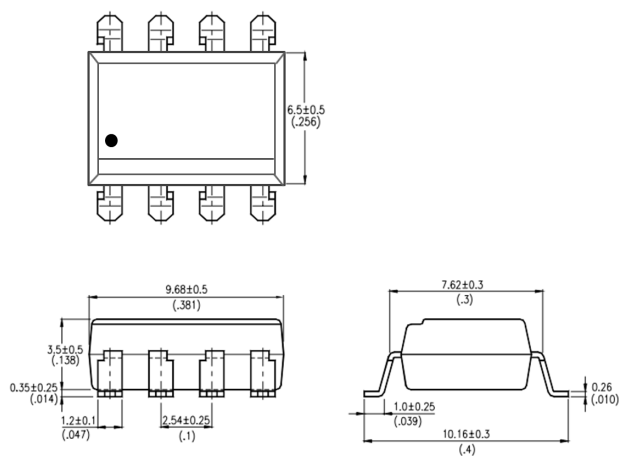
PACKAGE DIMENSIONS in mm (inch)

SMD

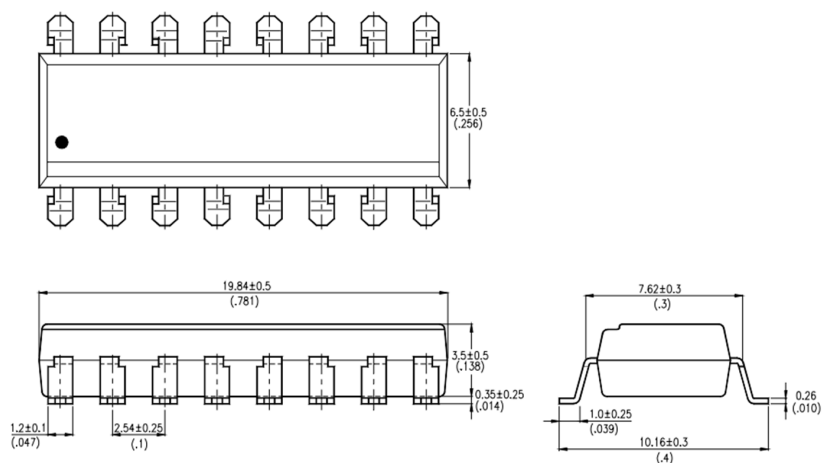
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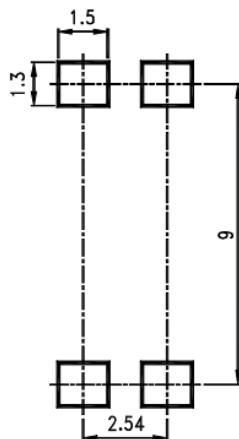
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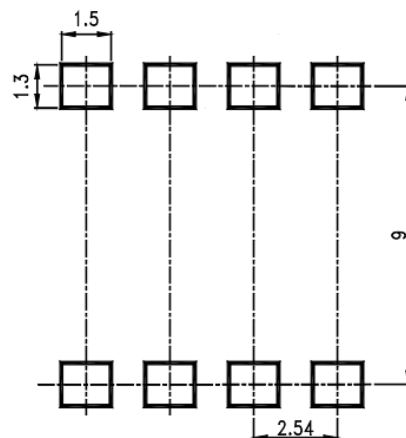
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RECOMMENDED PAD LAYOUT FOR SMD (mm)

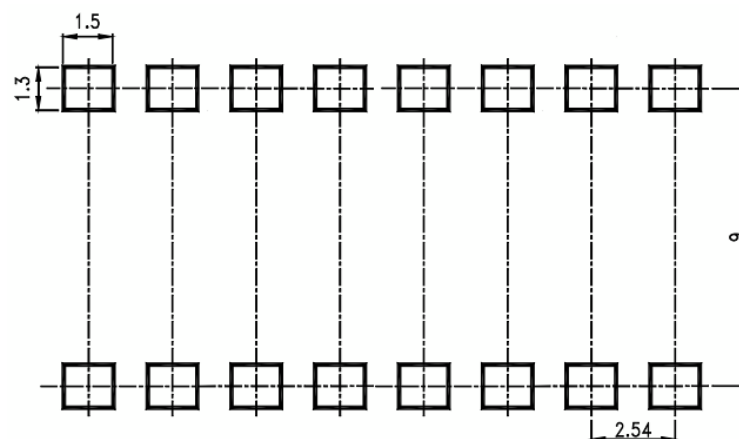
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ISP827SM



ISP847SM

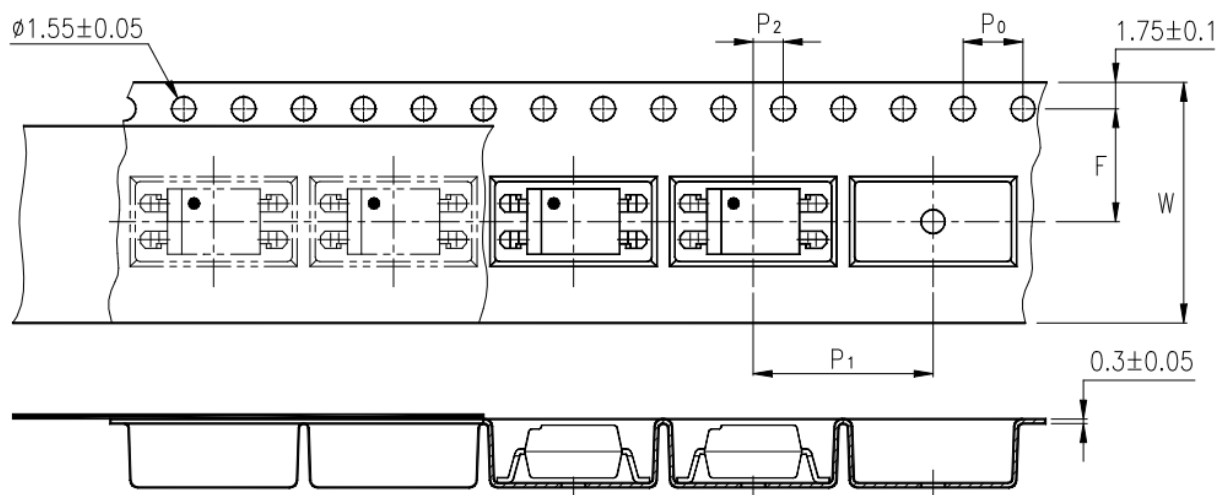




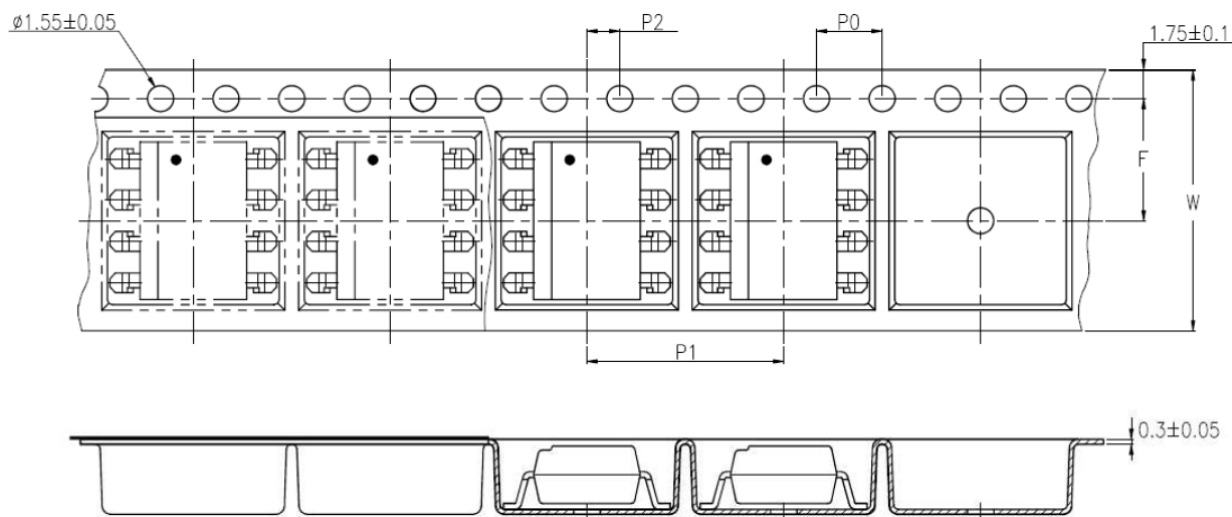
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TAPE AND REEL PACKAGING

ISP817SMT&R



ISP827SMT&R



Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	7.5 ± 0.1 (0.295)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	12 ± 0.1 (0.472)

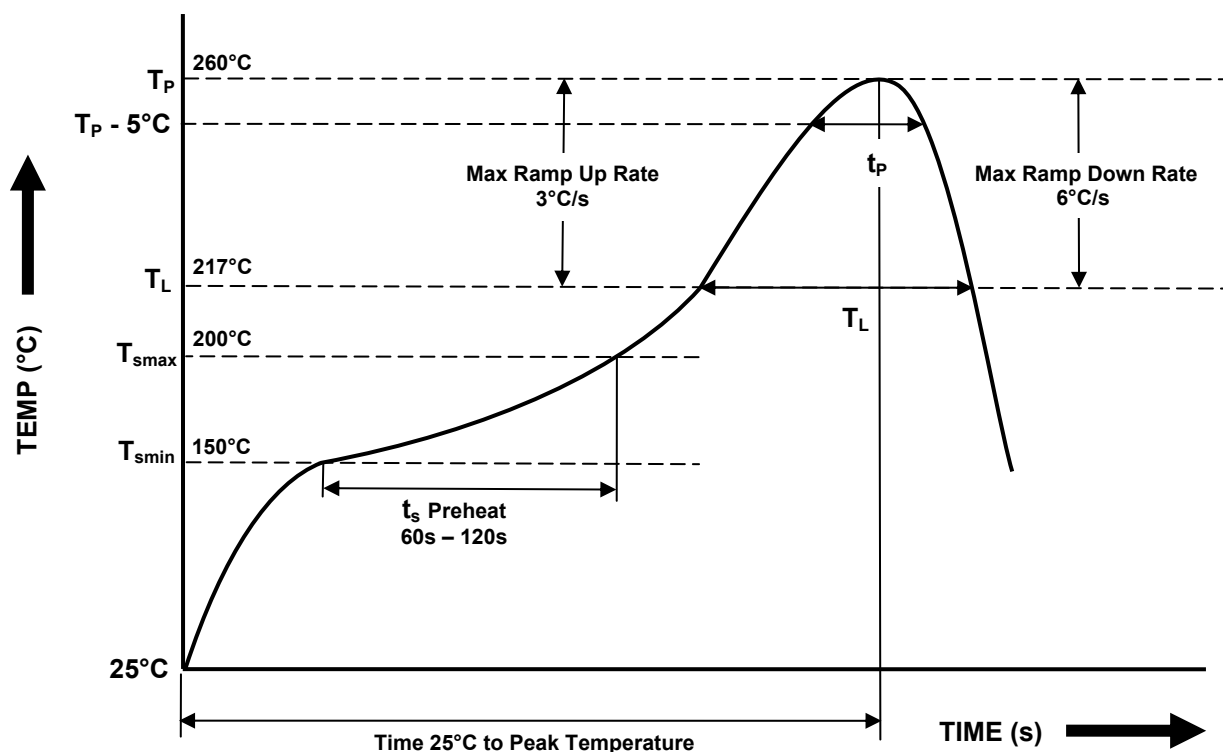


ISP817, ISP827, ISP847

IR REFLOW SOLDERING TEMPERATURE PROFILE FOR SMD

One Time Reflow Soldering is Recommended.

Do not immerse device body in solder paste.



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) - Time at Peak Temperature - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$) - 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 10s max 217°C 30s max 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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