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QT-Brightek Optocoupler Series

4-PIN AC Input Optocoupler

Part No.: QTM354



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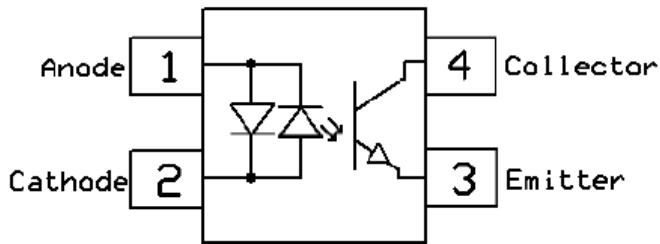
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Introduction

Feature:

- High Isolation voltage between input and output (Viso = 3750V rms)
- AC input with transistor output
- Operating Temperature up to 110 °C
- Mini-Flat package

Schematic:

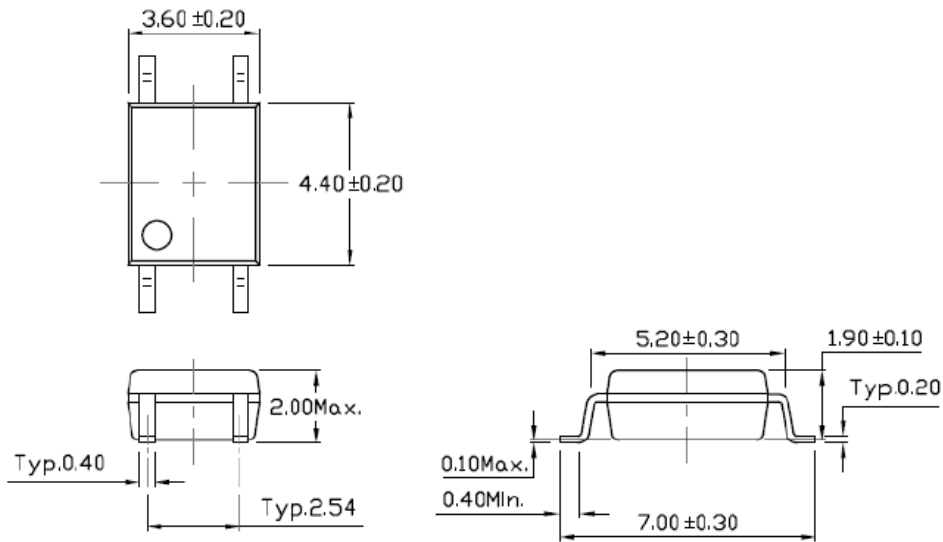


Certification & Compliance:

- Pb free and RoHS Compliant
- UL recognized (File #E338132)
- cUL recognized (File #E338132)
- VDE (Pending Approval)



Dimension: (Dot location indicates pin 1)



All Dimensions are in mm

Absolute Maximum Rating

Symbol	Parameter	Rating	Units
V _{ISO}	Isolation Voltage	3750	V _{RMS}
T _{STG}	Storage Temperature	-55 ~ +150	°C
T _{OPR}	Operating Temperature	-55 ~ +110	°C
T _{SOL}	Lead Solder Temperature	260 for 10 sec	°C
EMITTER			
I _F	Continuous Forward Current	±50	mA
I _{FP}	Peak Forward Current (≤ 1us, 300pps)	1	A
P _D	Power Dissipation	70	mW
	Power Dissipation Derated above 100°C	-	mW/°C
DETECTOR			
B _{VCEO}	Collector-Emitter Breakdown Voltage	80	V
B _{VECO}	Emitter-Collector Breakdown Voltage	7	V
I _C	Collector current	50	mA
P _C	Power Dissipation	150	mW

Electrical Characteristic (T_A=25 °C)

Emitter

Symbol	Characteristics	Device	Test Condition	Range			Unit
				Min	Typ	Max	
V _F	Forward Voltage	-	I _F = 10mA	-	1.24	1.4	V
			I _F = 50mA	-	-	-	
C _{IN}	Input Capacitance		f = 1kHz	-	45	-	pF

Detector

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
B _{VCEO}	Collector-Emitter Breakdown Voltage	-	I _C =100uA	80	-	-	V
B _{VECO}	Emitter-Collector Breakdown Voltage	-	I _C =100uA	7	-	-	uA
I _{CEO}	Collector-Emitter Dark Current	-	V _{CE} =20V, I _F =0mA	-	-	100	nA

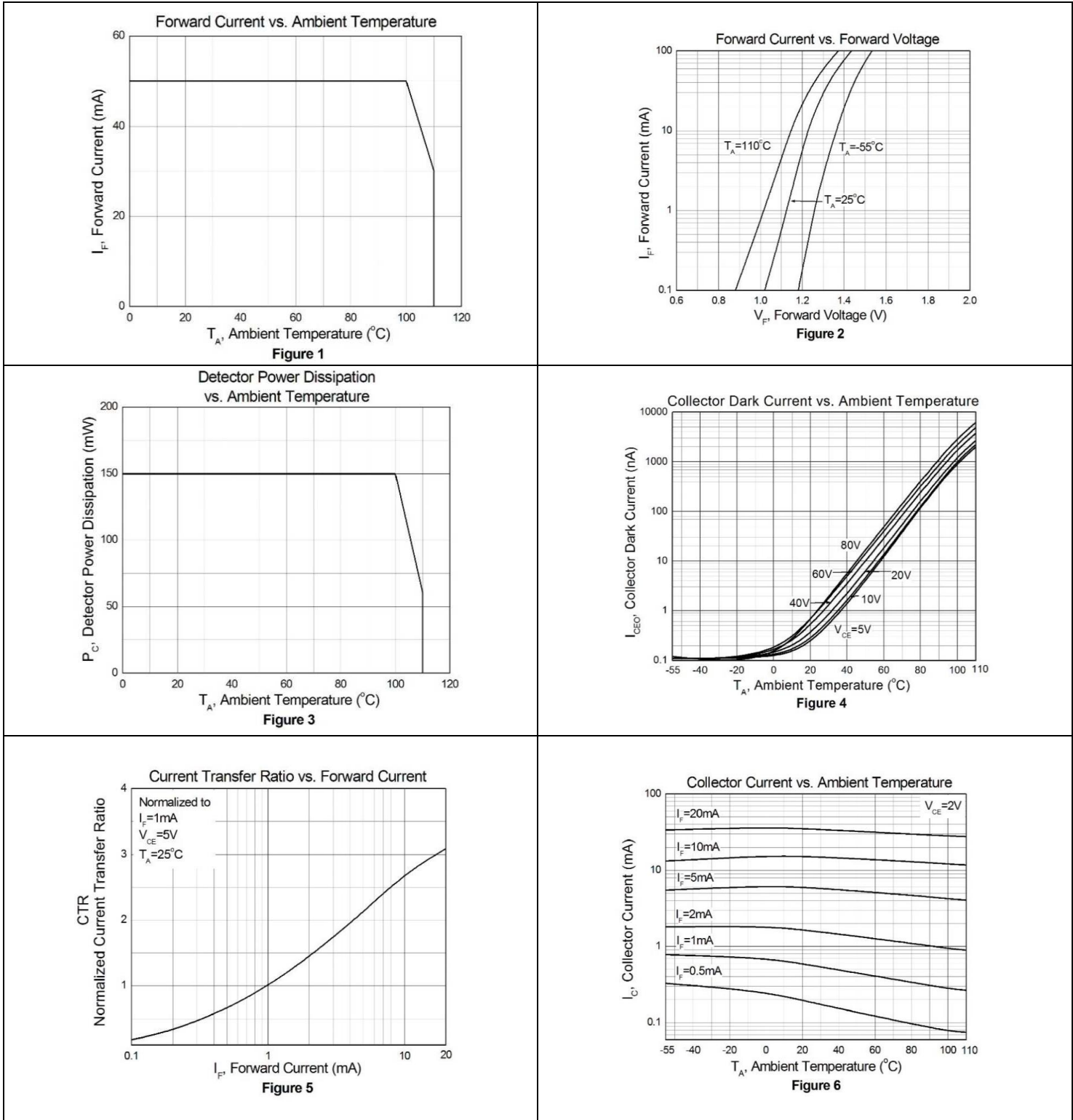
Transfer Characteristics (T_A=0 to 70C unless specified otherwise)

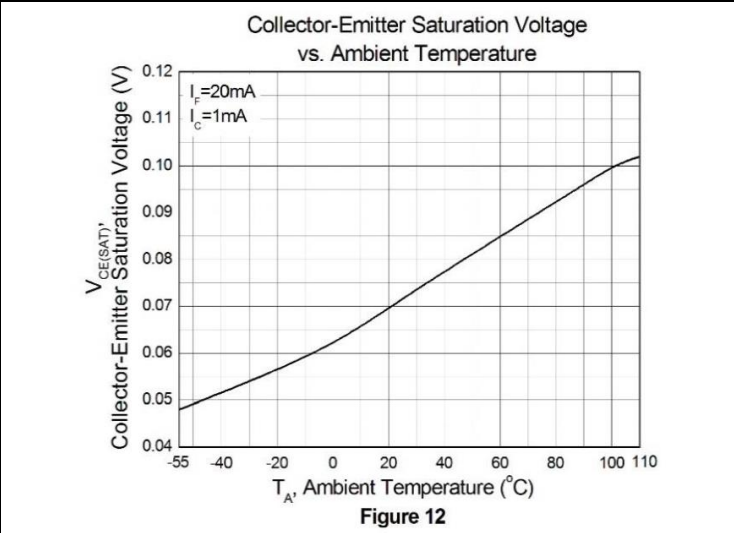
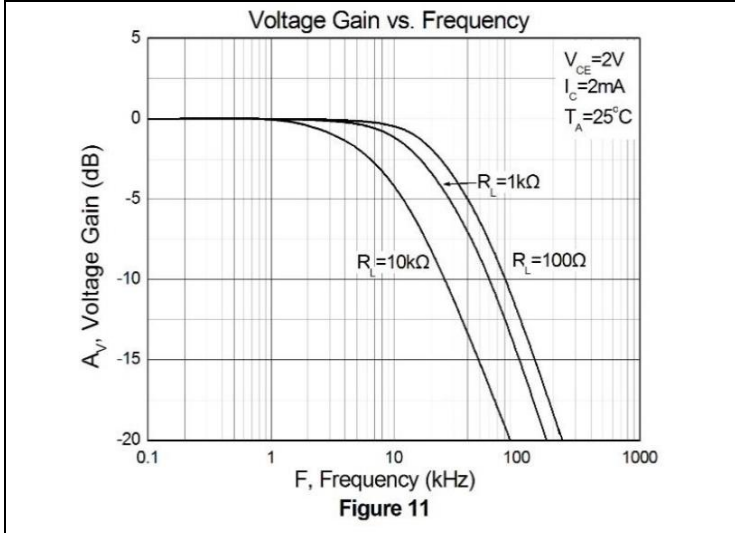
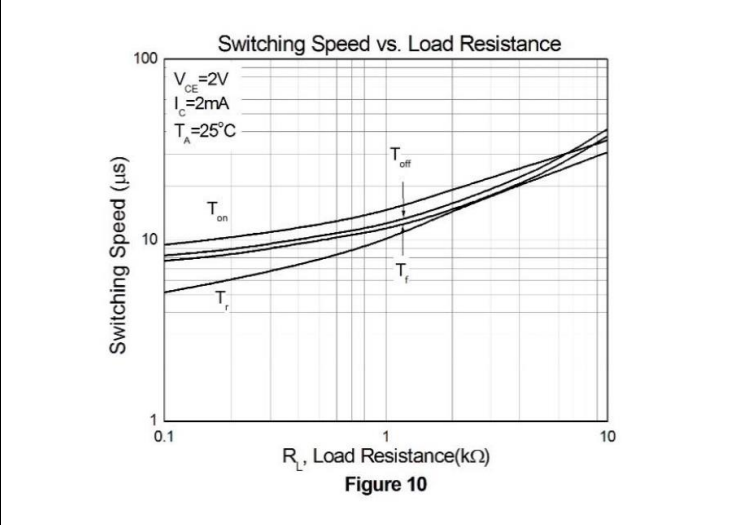
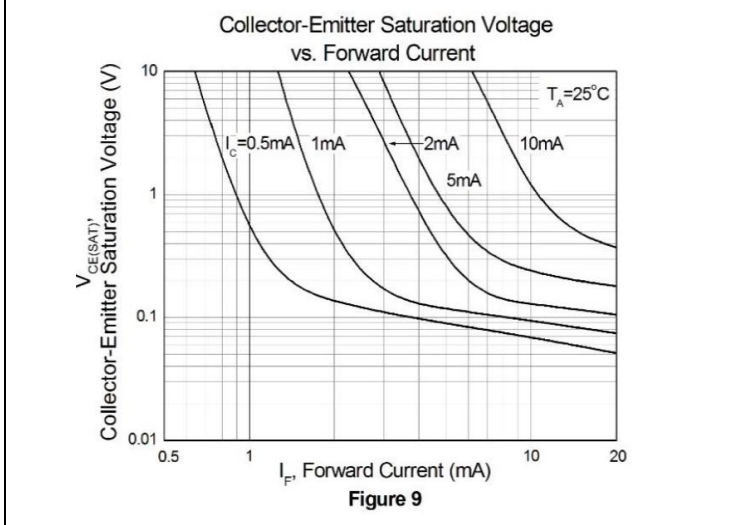
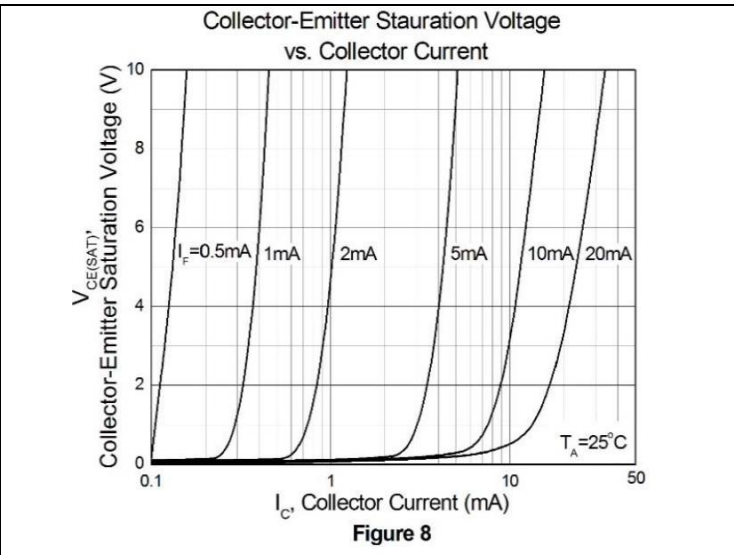
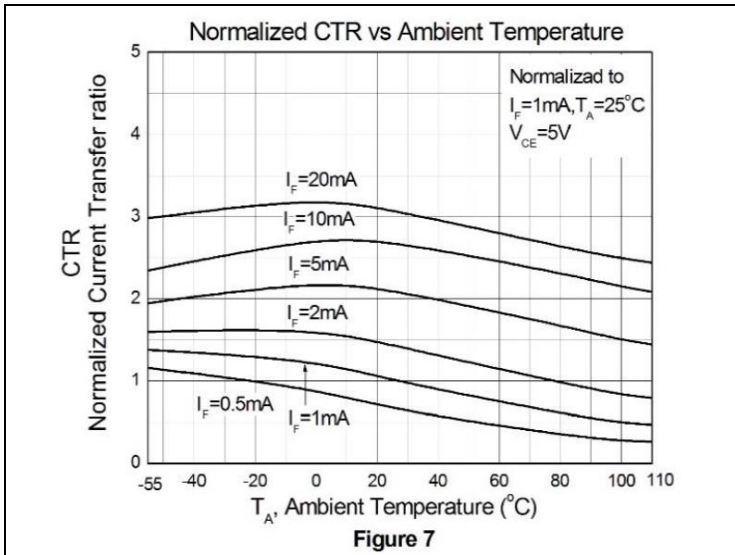
Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
CTR	Current Transfer Ratio	QTM354	I _F = ±1mA, V _{CE} =5V	20	-	300	%
		QTM354A		50	-	150	
V _{CE(SAT)}	Collector-Emitter Saturation Voltage		I _F = ±20mA, I _C =1mA	-	0.1	0.2	V
R _{IO}	Isolation Resistance		V _{IO} =500V _{DC}	5x10 ¹⁰	-	-	Ω
C _{IO}	Isolation Capacitance		f=1MHz	-	0.6	1.0	pF

Switching Characteristics (T_A=25°C, V_{CC}=5V)

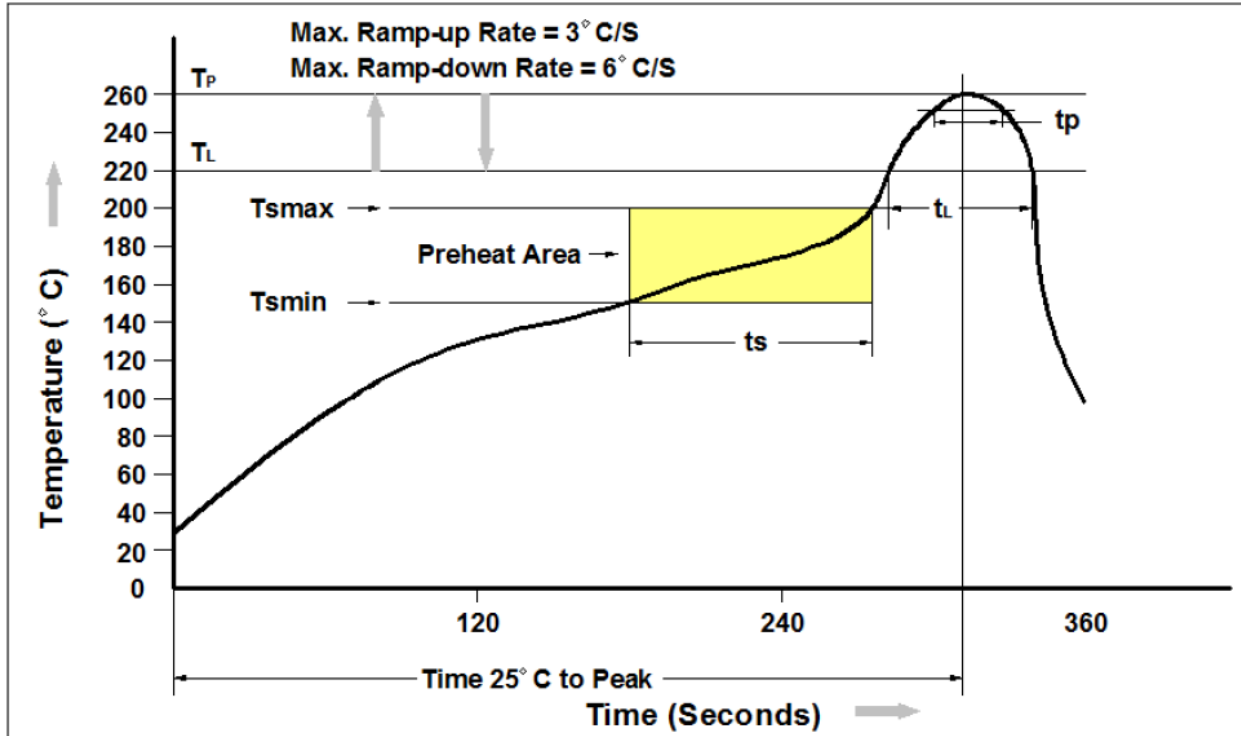
Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
t _r	Rise Time		I _C =2mA, V _{CE} 2V, R _L =100Ω	-	6	18	us
t _f	Fall Time			-	8	18	

Characteristic Curves

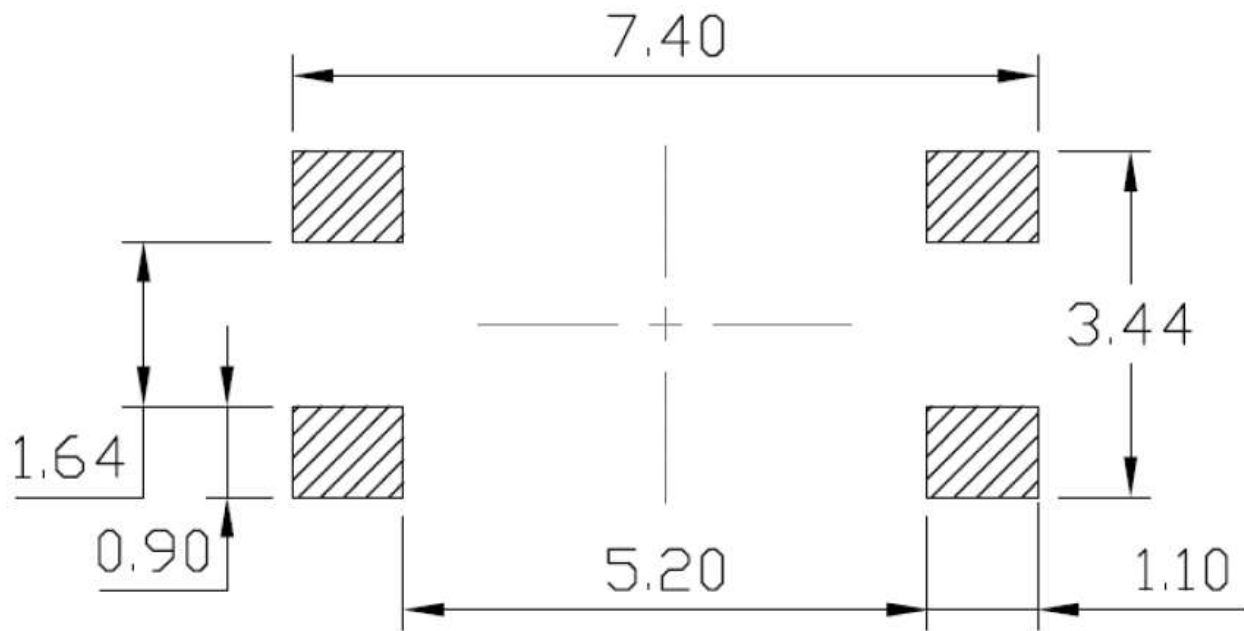




Solder Profile & Footprint



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up Rate (t _L to t _p)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t _p) within 5°C of 260°C	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



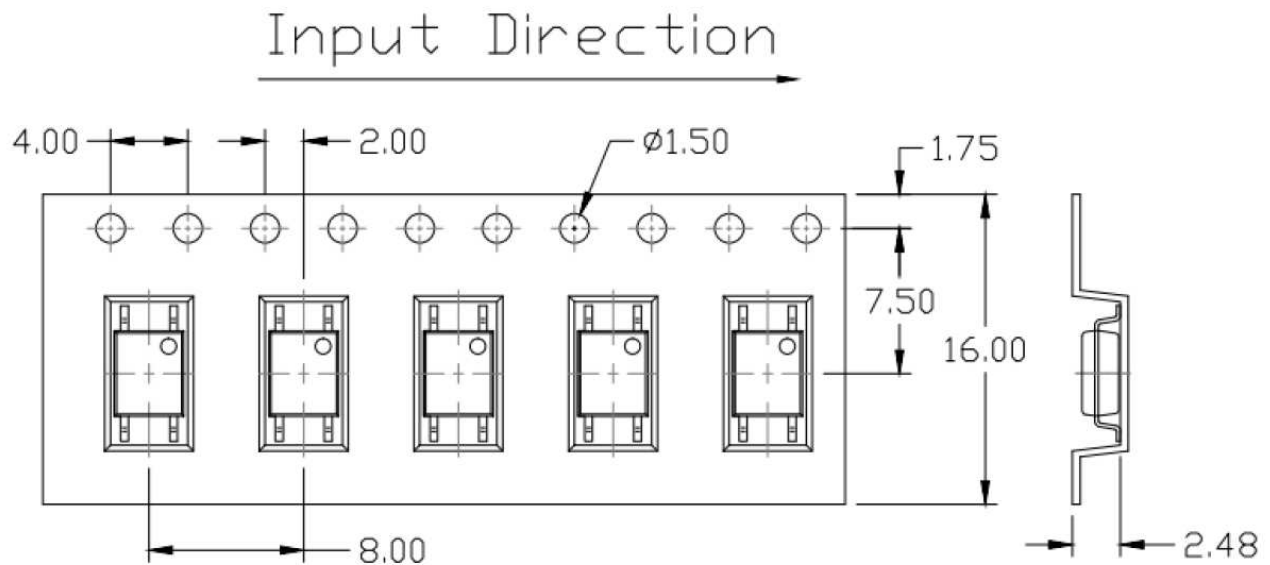
Recommended Solder Footprint for SMD Leadform

Units: mm

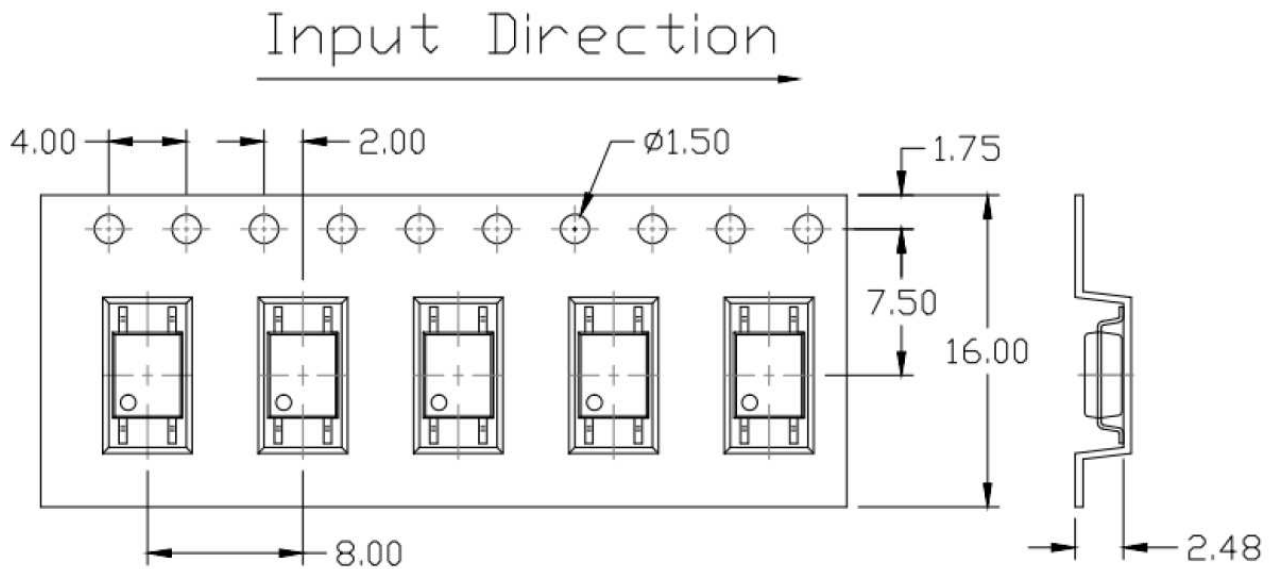
tolerance: +/- 0.1mm

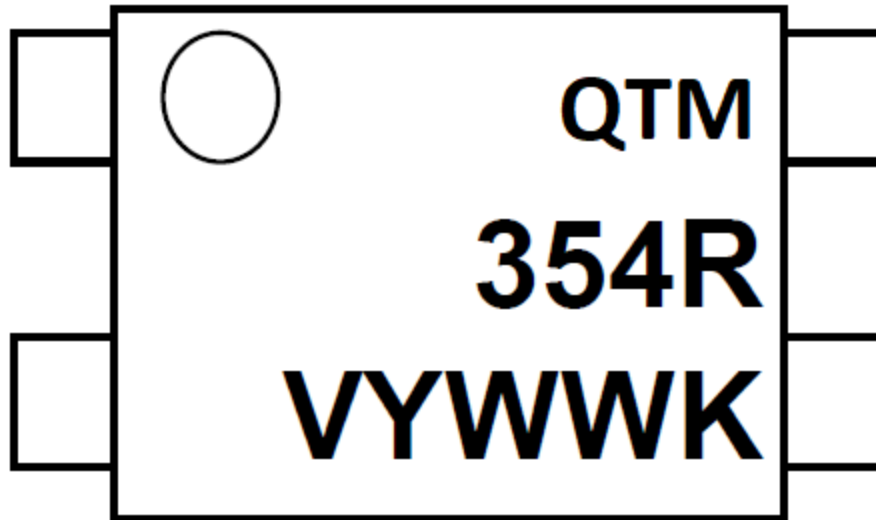
Packing & Labeling**Tape Dimension:**

Option (T1)



Option (T2)



Device Marking

QT = QT-Brightek Corporation
 M= Mini-Flat Package
 354 = part number
 R= CTR Rank
 Y = Year
 WW = Week
 V = VDE Option
 K= Manufacturing code

Ordering Information

QTM354X(V)(Z)
 X = Part number (X=A or None)
 V = VDE option (V or None)
 Z = Tape and reel option (T1 or T2)

Option	Description	Quantity
T1	Surface Mount Lead Forming – with Option 1 Taping	3000 pcs/ reel
T2	Surface Mount Lead Forming – with Option 2 Taping	3000 pcs/ reel



Revision History

Description:	Revision #	Revision Date
Initial release of QTM354	1.0	02/08/2018
Amend the Marking	1.1	04/13/2018

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