

QT-Brightek Optocoupler Series

4-PIN AC Input Optocoupler

Part No.: QTM354

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	Version# 1.1	



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Introduction

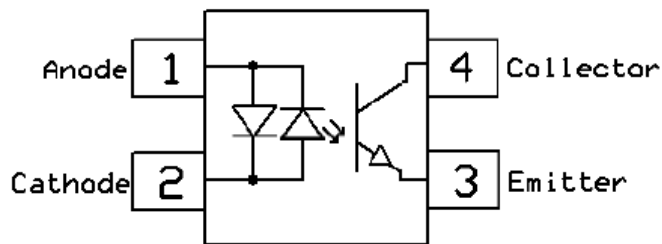
Feature:

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

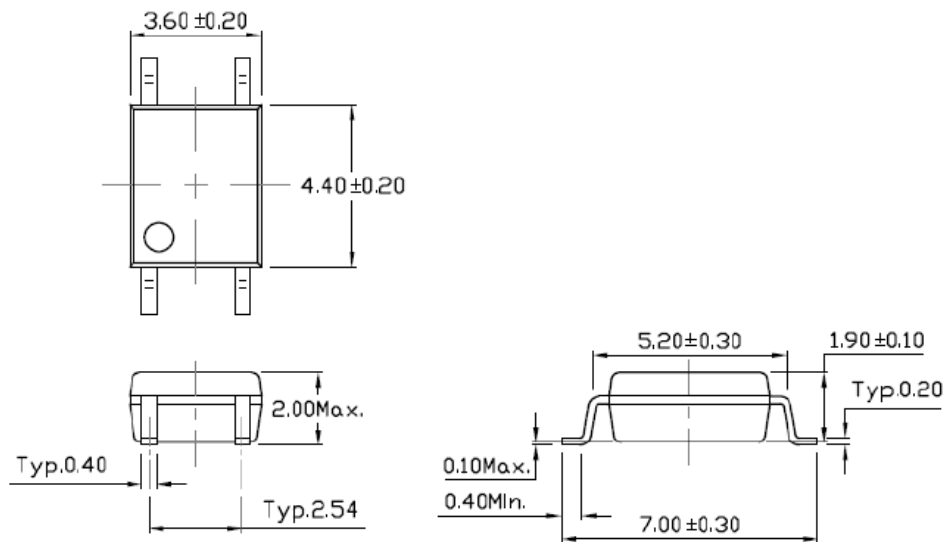
Certification & Compliance:

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

Schematic:



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

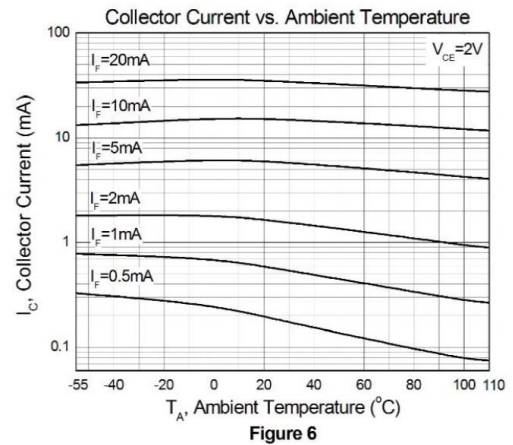
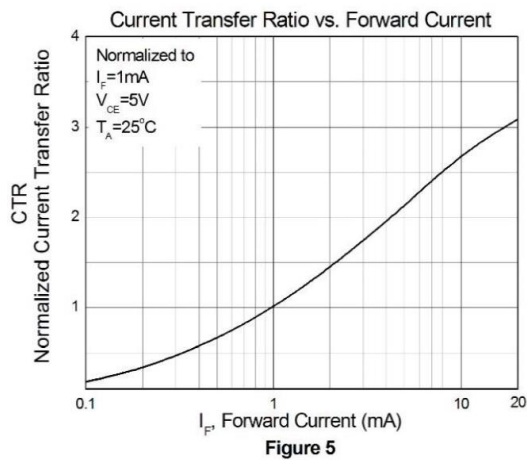
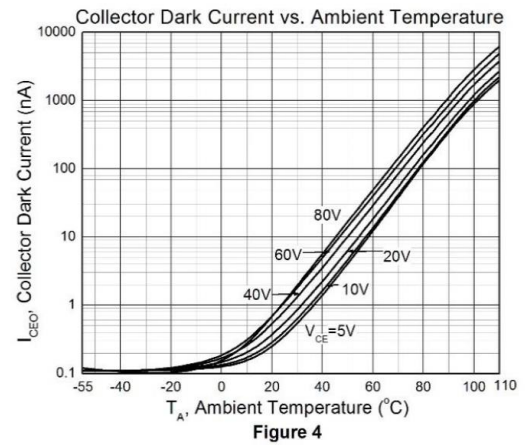
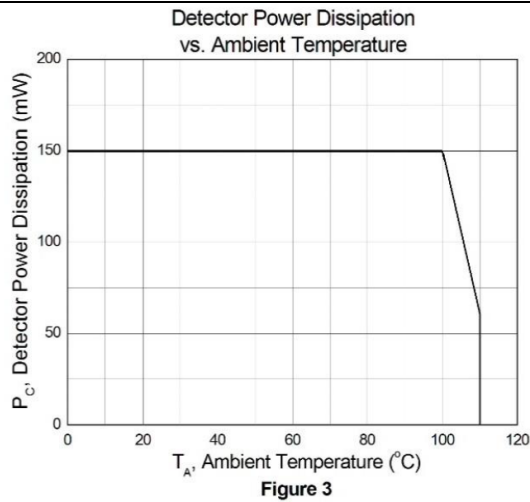
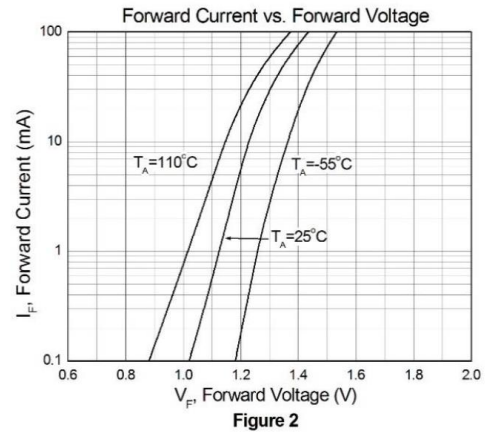
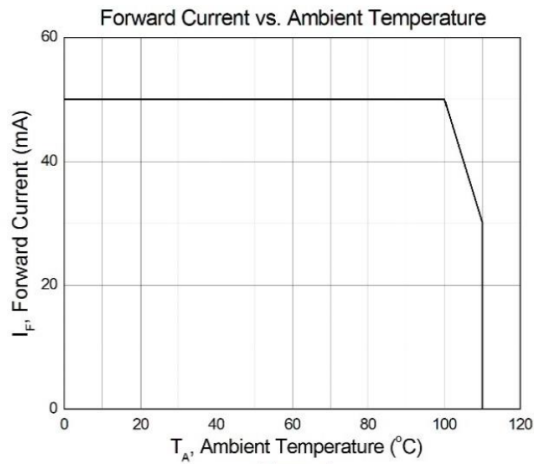
Transfer Characteristics (T_A=0 to 70C unless specified otherwise)

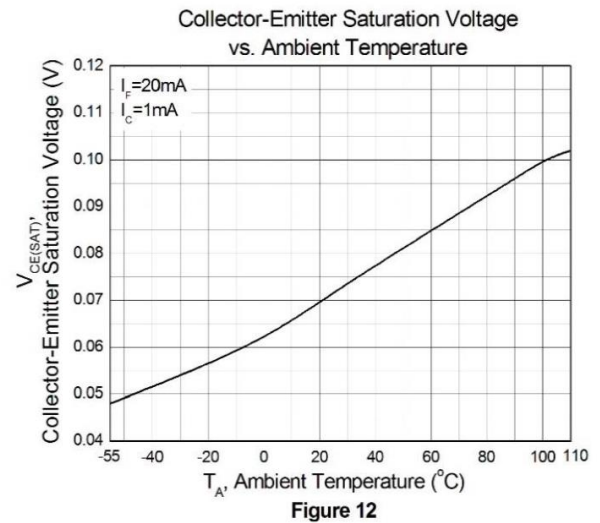
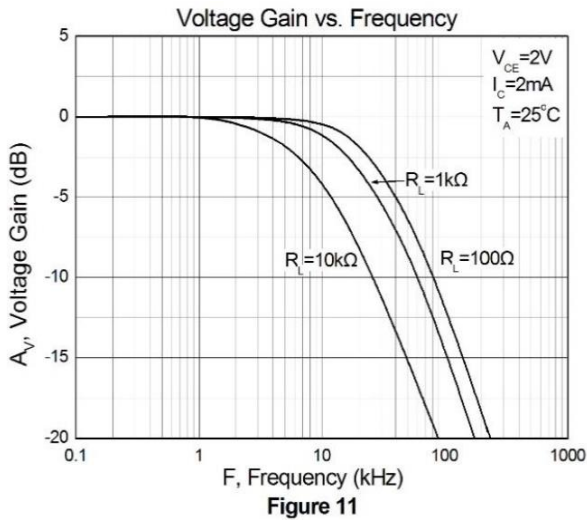
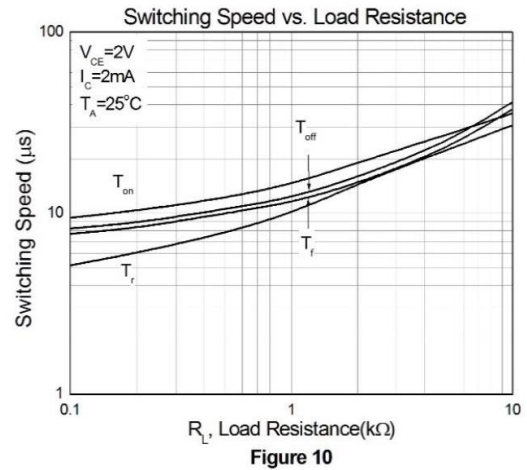
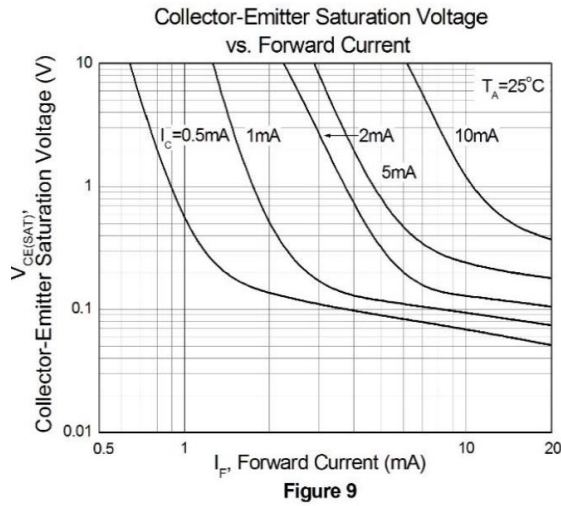
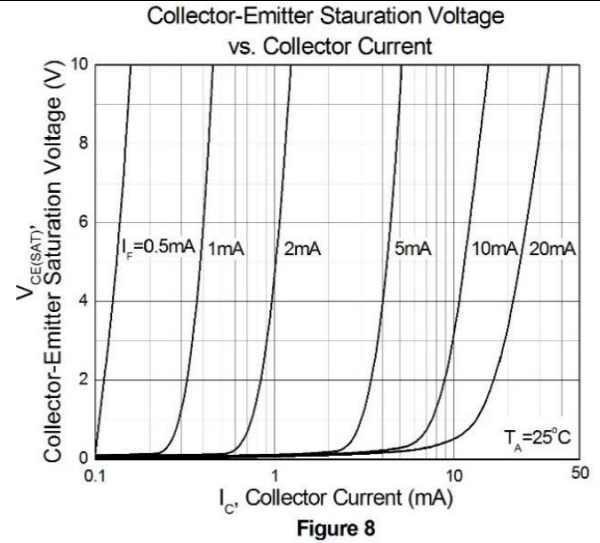
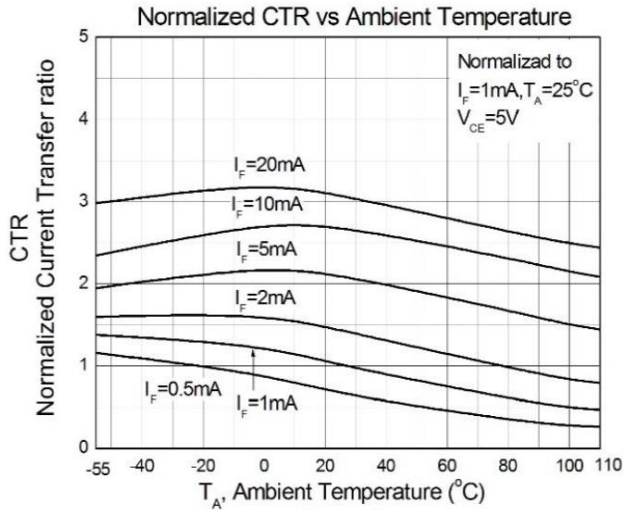
Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
CTR	Current Transfer Ratio	QTM354	I _F = ±1mA, V _{CE} =5V	20	-	300	%
		QTM354A		50	-	150	
V _{CE(SAT)}	Collector-Emitter Saturation Voltage		I _F = ±20mA, I _C =1mA	-	0.1	0.2	V
R _{IO}	Isolation Resistance		V _{IO} =500V _{DC}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

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

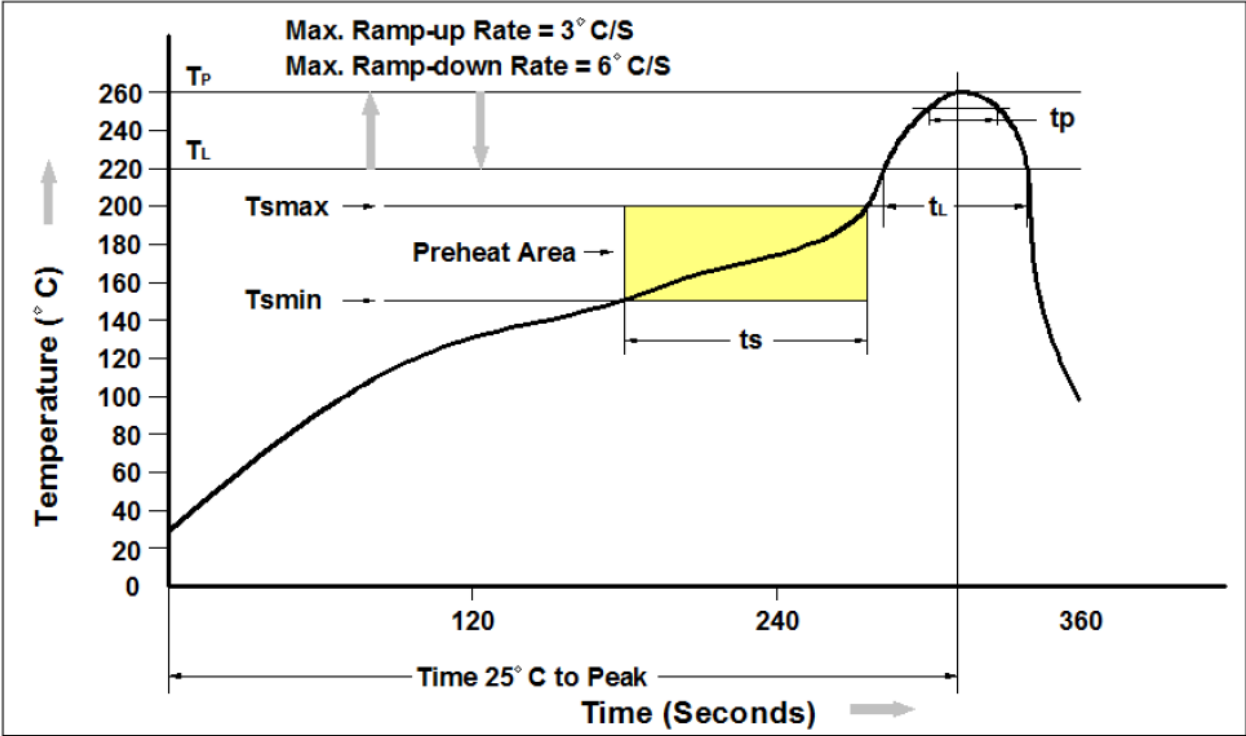
Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
t _r	Rise Time		I _C =2mA, V _{CE} 2V, R _L =100Ω	-	6	18	us
t _f	Fall Time			-	8	18	

Characteristic Curves

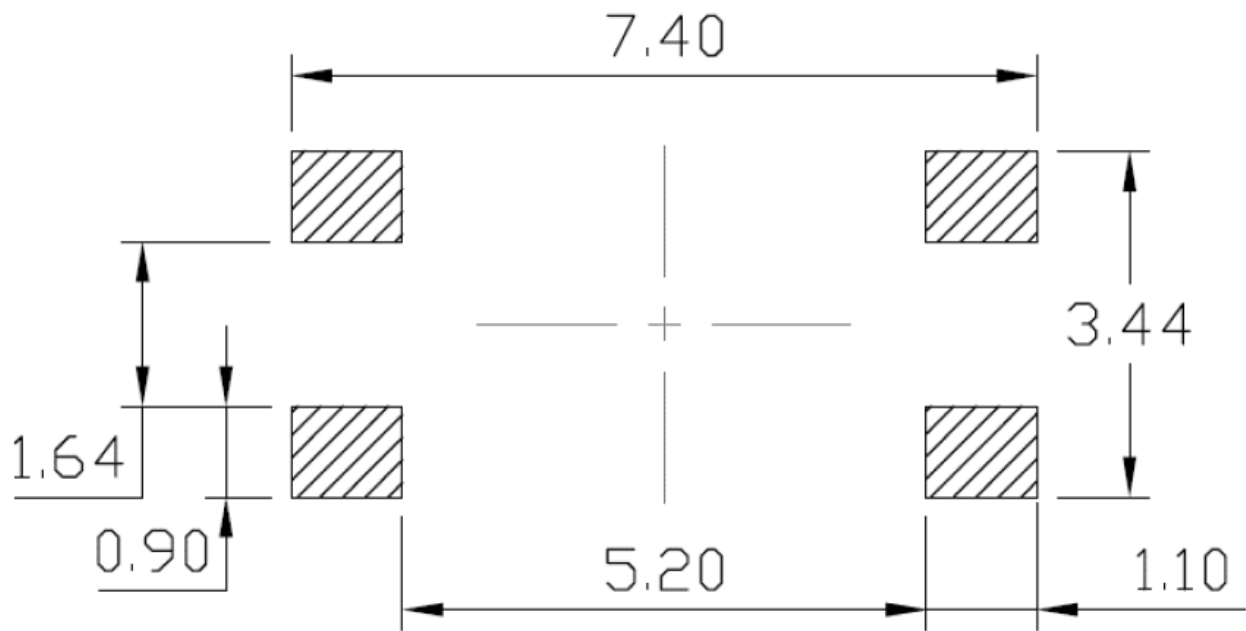




Solder Profile & Footprint



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

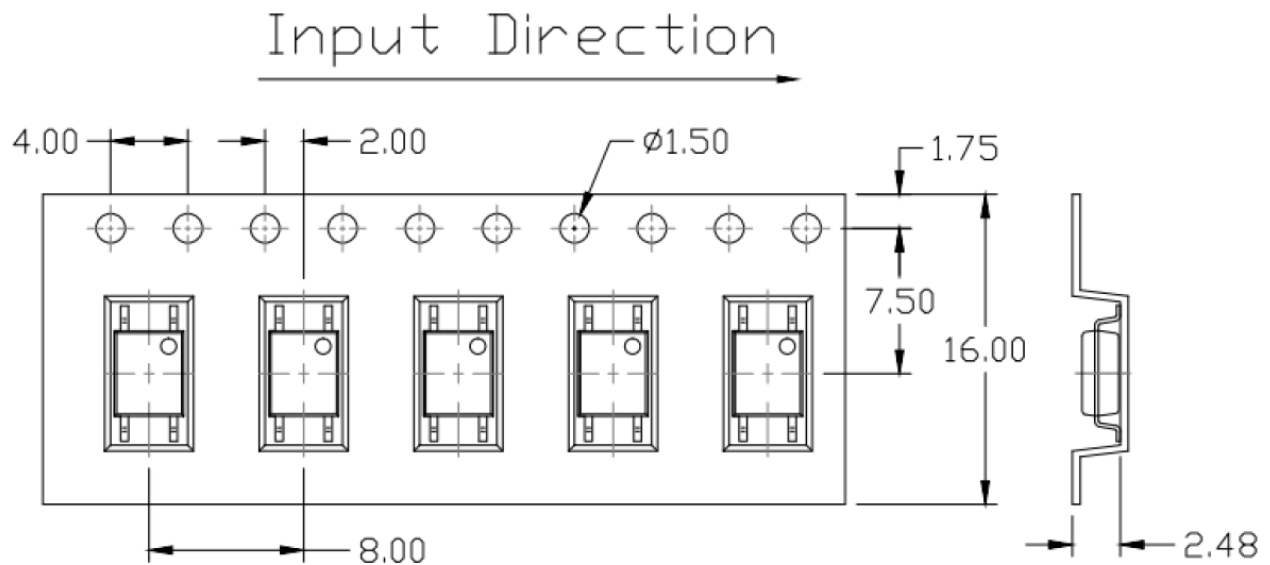
Units: mm

tolerance: +/- 0.1mm

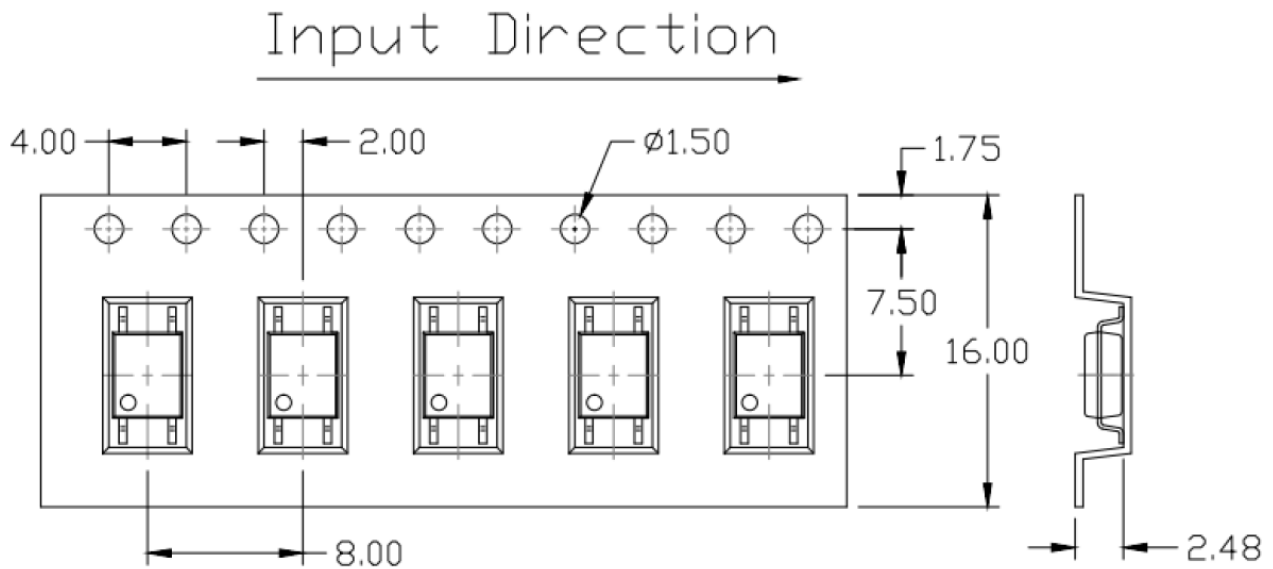
Packing & Labeling

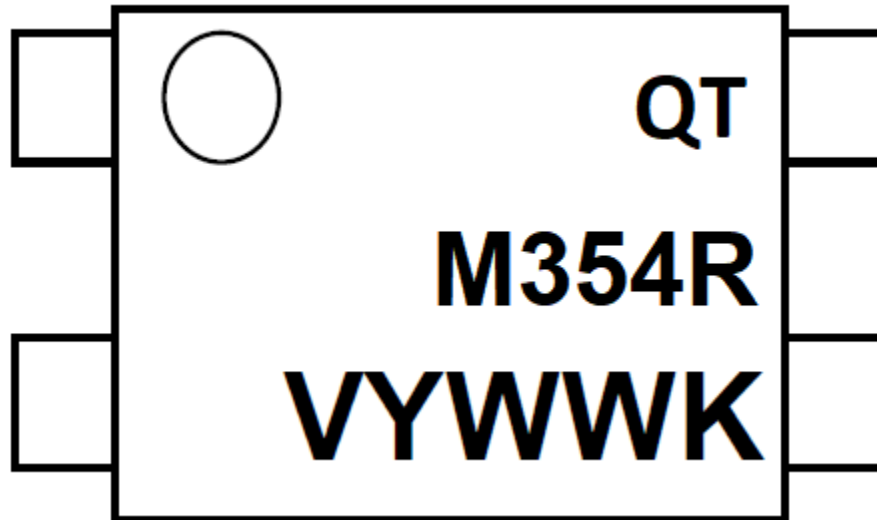
Tape Dimension:

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

QTM354XVZ

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

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Revision History

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

Disclaimer

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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