

# Miniature Reflective Object Sensor

## Product Preview QRE1114GR

### Features

- Phototransistor Output
- No Contact Surface Sensing
- Miniature Package
- Narrow On-State Collector Current

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
TOPR	Operating Temperature	-40 to +85	$^\circ\text{C}$
TSTG	Storage Temperature	-40 to +90	$^\circ\text{C}$
TSOL-I	Soldering Temperature (Iron) (Notes 2, 3, 4)	240 for 5 s	$^\circ\text{C}$
TSOL-F	Soldering Temperature (Flow) (Notes 3, 4)	260 for 10 s	$^\circ\text{C}$

### EMITTER

$I_F$	Continuous Forward Current	50	mA
$V_R$	Reverse Voltage	5	V
$I_{FP}$	Peak Forward Current (Note 5)	1	A
$P_D$	Power Dissipation (Note 1)	75	mW

### SENSOR

$V_{CEO}$	Collector-Emitter Voltage	30	V
$V_{ECO}$	Emitter-Collector Voltage	5	V
$I_C$	Collector Current	20	mA
$P_D$	Power Dissipation (Note 1)	50	mW

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

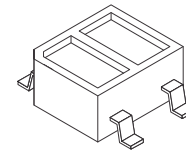
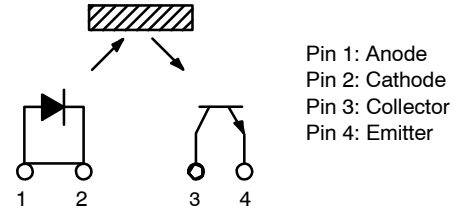
1. Derate power dissipation linearly 1.00 mW/ $^\circ\text{C}$  above 25 $^\circ\text{C}$ .
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6 mm) from housing.
5. Pulse conditions:  $t_p = 100 \text{ s}$ ;  $T = 10 \text{ ms}$ .

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.



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ARUSM-313  
CASE 100CY

### ORDERING INFORMATION

Device	Package	Shipping†
QRE1114GR	Reflective Rectangular (Surface Mount)	1000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# QRE1114GR

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
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### INPUT DIODE

V <sub>F</sub>	Forward Voltage	I <sub>F</sub> = 20 mA	-	1.2	1.6	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>R</sub> = 5 V	-	-	10	μA
P <sub>E</sub>	Peak Emission Wavelength	I <sub>F</sub> = 20 mA	-	940	-	nm

### OUTPUT TRANSISTOR

I <sub>D</sub>	Collector-Emitter Dark Current	I <sub>F</sub> = 0 mA, V <sub>CE</sub> = 20 V	-	-	100	nA
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### COUPLED

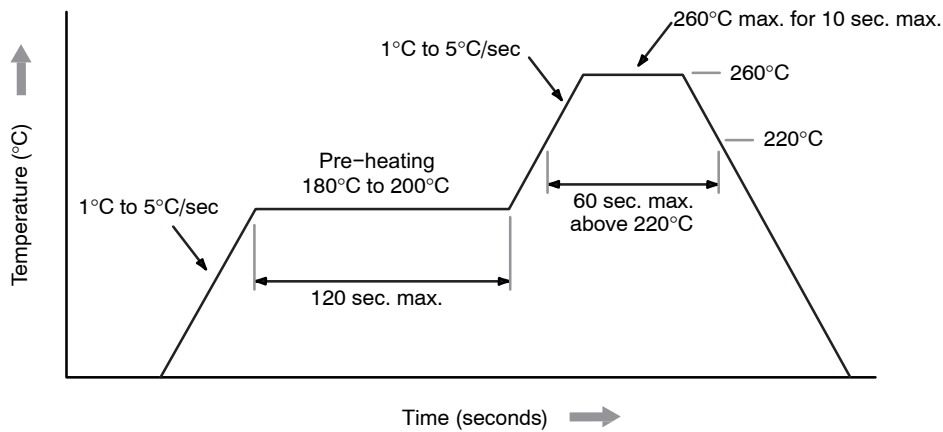
I <sub>C(ON)</sub>	On-State Collector Current	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 5 V (Note 6)	0.30	-	0.60	mA
I <sub>CX</sub>	Cross-Talk Collector Current	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 5 V (Note 7)	-	-	1	μA
V <sub>CE(SAT)</sub>	Saturation Voltage	I <sub>F</sub> = 20 mA, I <sub>C</sub> = 50 μA (Note 6)	-	-	0.3	V
t <sub>r</sub>	Rise Time	V <sub>CC</sub> = 5 V, I <sub>C(ON)</sub> = 100 μA, R <sub>L</sub> = 100 KΩ	-	20	-	μs
t <sub>f</sub>	Fall Time		-	20	-	μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

6. Measured using an aluminum alloy mirror at d = 1 mm.

7. No reflective surface at close proximity.

## REFLOW PROFILE



**Figure 1. Reflow Profile**

# QRE1114GR

## TAPING DIMENSIONS

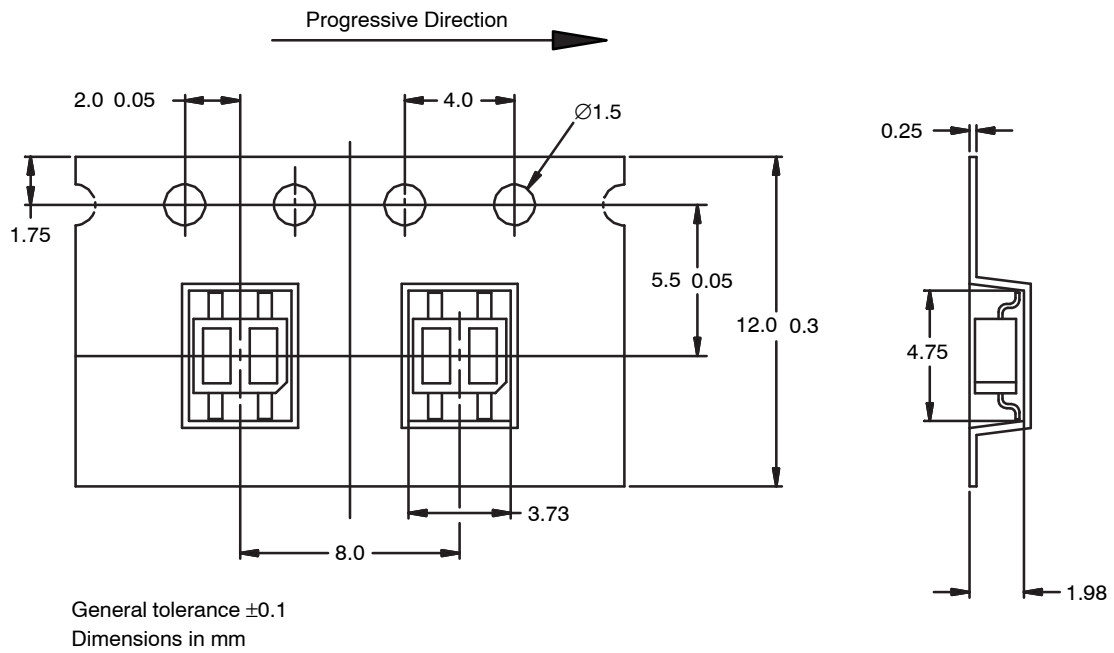


Figure 2. Taping Dimensions for GR Option

## REEL DIMENSIONS

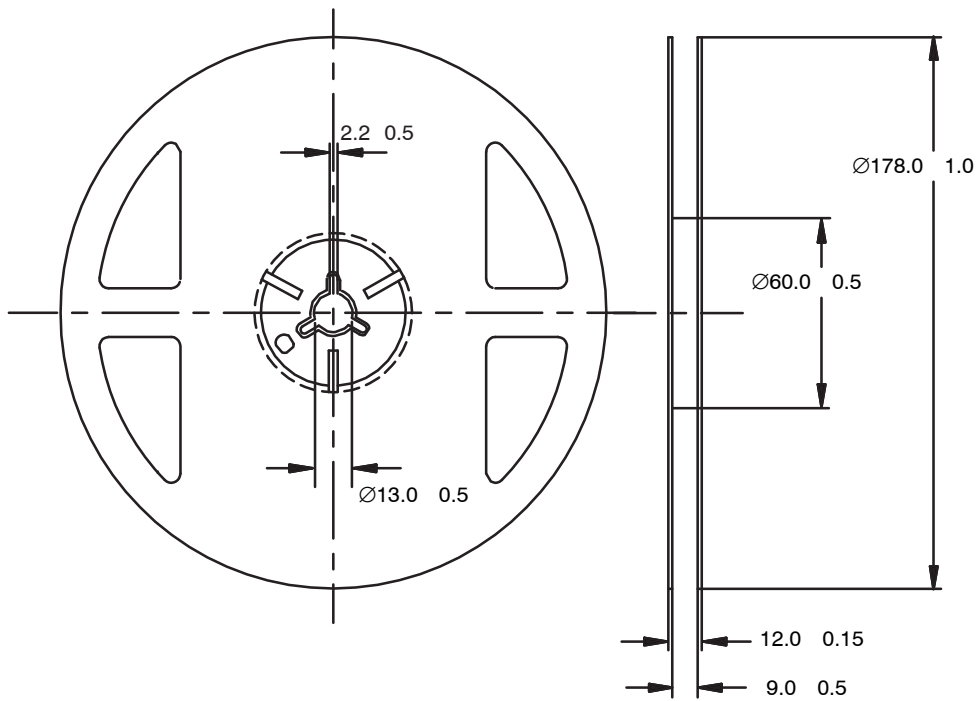


Figure 3. Reel Dimensions

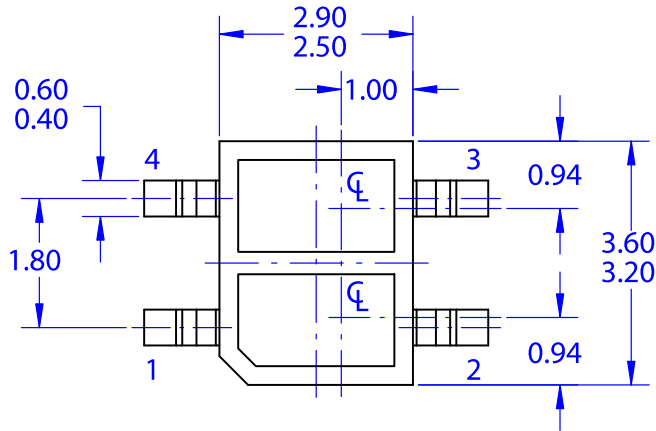
# QRE1114GR

## PACKAGE DIMENSIONS

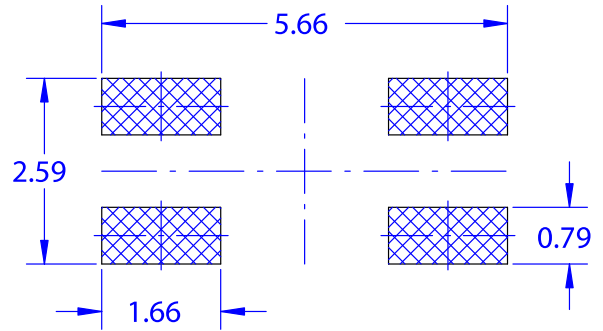
### ARUSM-313 / REFLECTIVE RECTANGULAR SURFACE MOUNT

CASE 100CY

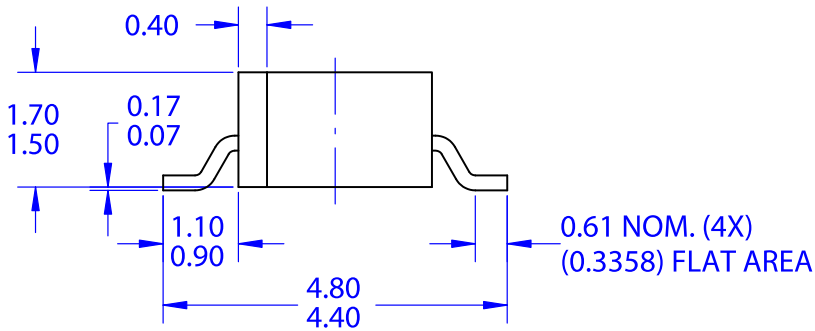
ISSUE O



TOP VIEW




LAND PATTERN RECOMMENDATION



SIDE VIEW

#### NOTES:

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. TOLERANCE OF  $\pm 0.15\text{MM}$  ON ALL NON-NOMINAL DIMENSIONS

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