66353

SINGLE CHANNEL
HIGH VOLTAGE OPTOCOUPLER

OPTOELECTRONIC PRODUCTS DIVISION

04/02/2014

Features:

- 8 kV Isolation Voltage
- 850 nm Emitters
- 6 kV Output Blocking Voltage

Applications

- High Voltage Power Supplies
- High Voltage Instruments
- Voltage Level Shifting
- Space Instrumentation

DESCRIPTION

The ***66353*** is a single channel High Voltage Opto-coupler using 850 nm Infrared Light Emitting Diodes optically coupled to a series of high voltage Silicon Photodiodes. The High Voltage Opto-coupler is mounted into a non hermetic 4 Pin custom package designed to withstand high isolation voltage and is available as a commercial device or screened according to methods of MIL-PRF-38534 (where applicable). **This device is not compliant to MIL-PRF-38534.**

ABSOLUTE MAXIMUM RATINGS (t_A = 25°C unless otherwise noted)

Operating Free-Air Temperature Range ..... -40°C to +100°C
Storage Temperature ..... -55°C to +125°C
Lead Soldering Temperature (1.6 mm from case for 5 seconds) ..... 240°C
Input to output Isolation Voltage (Note 1) ..... 8 kVDC

Input Diode:

Reverse Voltage (at 25°C case temperature) ..... 7 VDC
Peak Forward Current (1μs pulse width, 300 pps) ..... 1 A
Forward Current-Continuous at 25°C case temperature ..... 100 mA
Input Power Dissipation (Note 2) ..... 550 mW

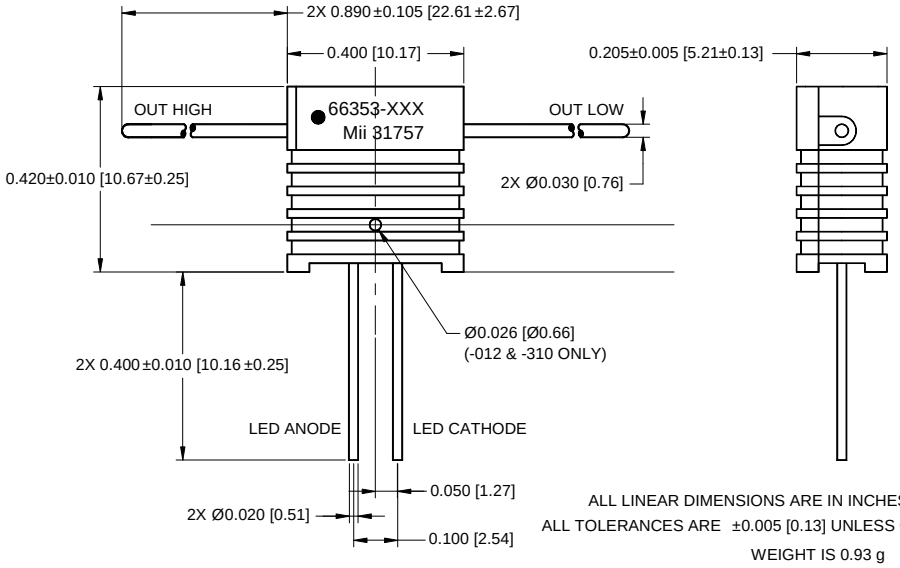
Output Photodetector:

Output Reverse Breakdown Voltage ..... 6 kVDC
Continuous Detector Current (V_{OUT} or P_{OUT} dependent) @ 2.5 kV ..... 600 μA
Power Dissipation at 25°C case temperature (Note 3) ..... 1.5 W

NOTES:

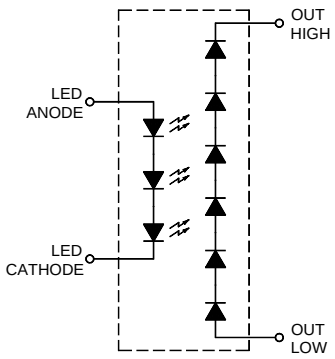
1. Measured with input leads shorted together and output leads shorted together.
2. Derate linearly at the rate of 15 mW/°C above 65°C case.
3. Derate linearly at the rate of 40 mW/°C above 65°C case.

Package Dimensions



ALL LINEAR DIMENSIONS ARE IN INCHES [MILLIMETERS]
ALL TOLERANCES ARE ±0.005 [0.13] UNLESS OTHERWISE SPECIFIED
WEIGHT IS 0.93 g

Schematic Diagram



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ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Characteristic							
Input Forward Voltage	$V_{F(IN)}$	3.8		5.0	V	I_F = 20 mA	
		4.3		6.0		I_F = 100 mA	
Input Reverse Current	I_R			100	µA	V_R =3 V	
Output Characteristic							
Output Forward Voltage	$V_{F(OUT)}$	3.8		5.0	V	I_F = 20 mA	
		4.3		6.0		I_F = 100 mA	
Dark Current	I_D			100	nA	I_F = 0 mA, V_{OUT} = 4.0 kV	
				250		I_F = 0 mA, V_{OUT} = 6.0 kV	
Coupled Characteristic							
Input-Output Isolation Current	I_{IO}			10	µA	V_{IO} = 8 kV	
Current Transfer Ratio	CTR	0.6			%	I_F = 20 mA, V_{OUT} = 0 V	
		1.2				I_F = 20 mA, V_{OUT} = 750 V	
		1.4				I_F = 20 mA, V_{OUT} = 2.5 kV	

ELECTRICAL CHARACTERISTICS

T_A = 100°C unless otherwise specified.

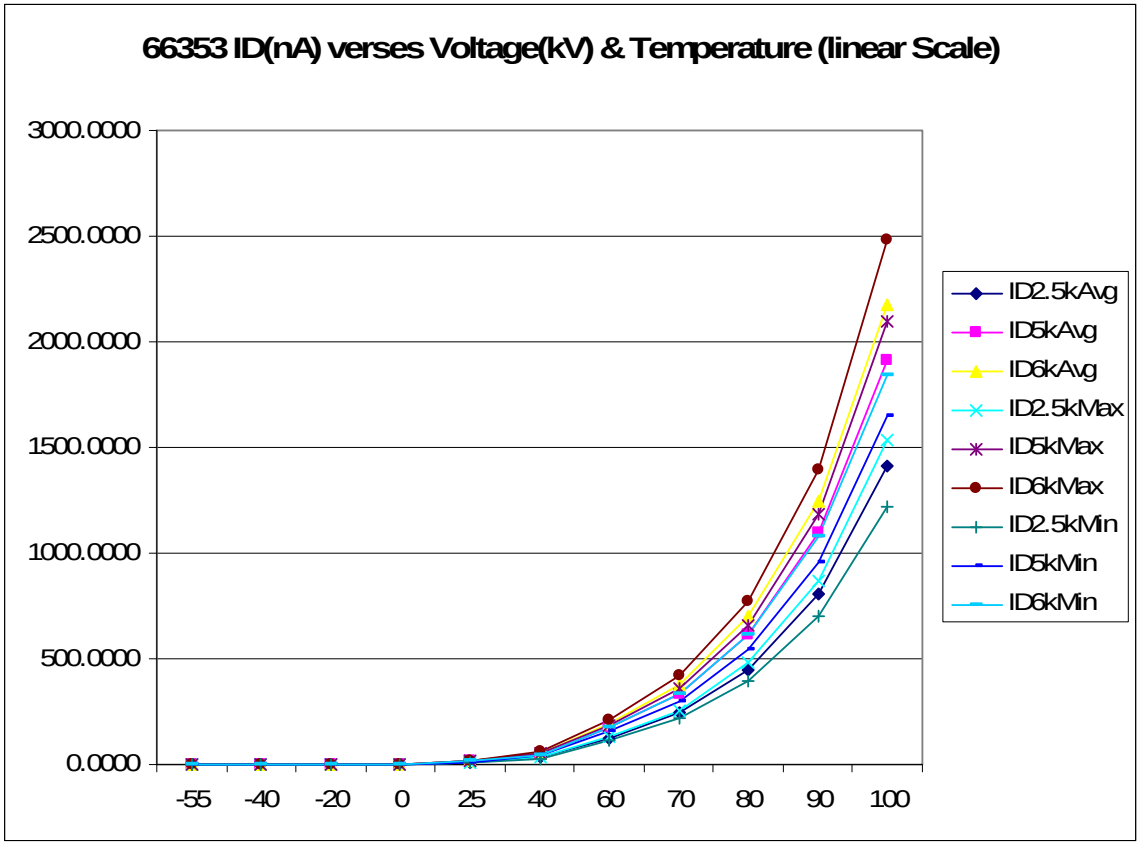
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Characteristic							
Input Forward Voltage	$V_{F(IN)}$	3.6		4.2	V	I_F = 20 mA	
		4.1		5.0		I_F = 100 mA	
Input Reverse Current	I_R			100	µA	V_R = 3 V	
Output Characteristic							
Output Forward Voltage	$V_{F(OUT)}$	2.8		3.8	V	I_F = 20 mA	
		3.5		4.3		I_F = 100 mA	
Dark Current	I_D			2.5	µA	I_F = 0 mA, V_{OUT} = 4.0 kV	
				5.0		I_F = 0 mA, V_{OUT} = 6.0 kV	
Coupled Characteristic							
Current Transfer Ratio	CTR	0.6			%	I_F = 20 mA, V_{OUT} = 0 V	
		1.0				I_F = 20 mA, V_{OUT} = 750 V	
		1.2				I_F = 20 mA, V_{OUT} = 2.5 kV	

ELECTRICAL CHARACTERISTICS

T_A = -40°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Characteristic							
Input Forward Voltage	$V_{F(IN)}$	4.0		4.8	V	I_F = 20 mA	
		4.5		5.4		I_F = 100 mA	
Input Reverse Current	I_R			100	µA	V_R = 3 V	
Output Characteristic							
Output Forward Voltage	$V_{F(OUT)}$	4.3		5.1	V	I_F = 20 mA	
		4.8		6.0		I_F = 100 mA	
Dark Current	I_D			100	nA	I_F = 0 mA, V_{OUT} = 4.0 kV	
				250		I_F = 0 mA, V_{OUT} = 6.0 kV	
Coupled Characteristic							
Current Transfer Ratio	CTR	0.6			%	I_F = 20 mA, V_{OUT} = 0 V	
		1.0				I_F = 20 mA, V_{OUT} = 750 V	
		1.2				I_F = 20 mA, V_{OUT} = 2.5 kV	

Typical Characteristics:



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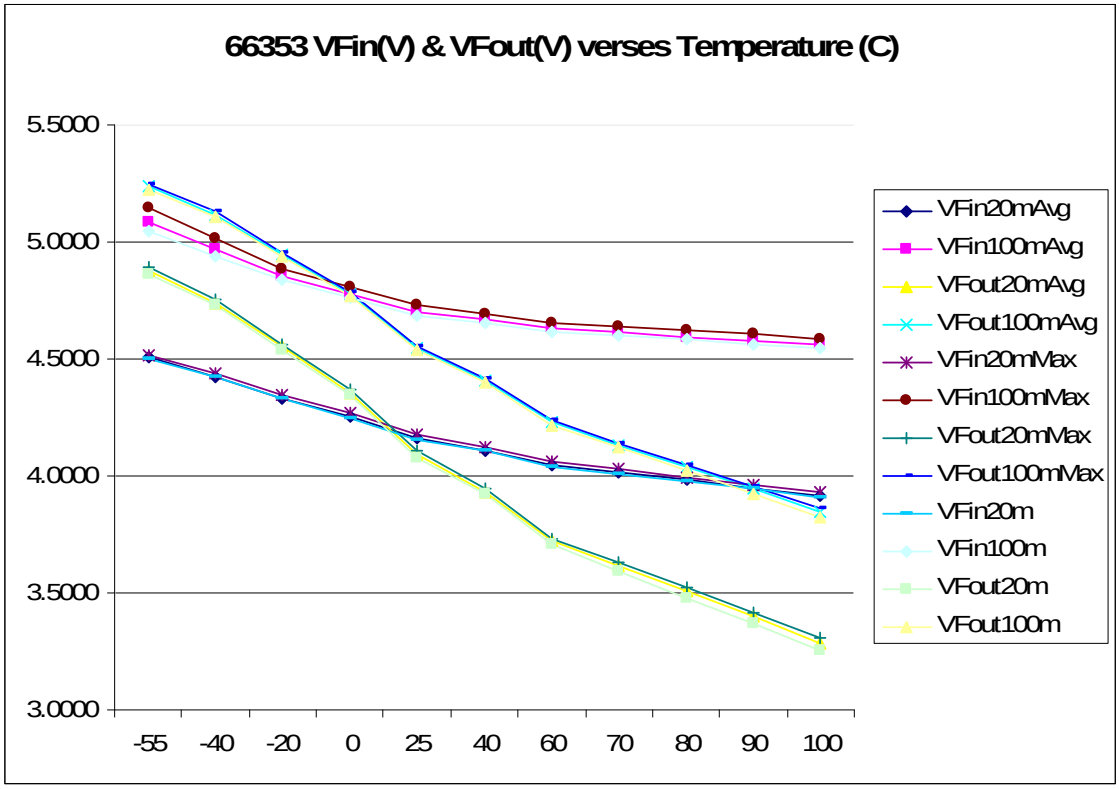

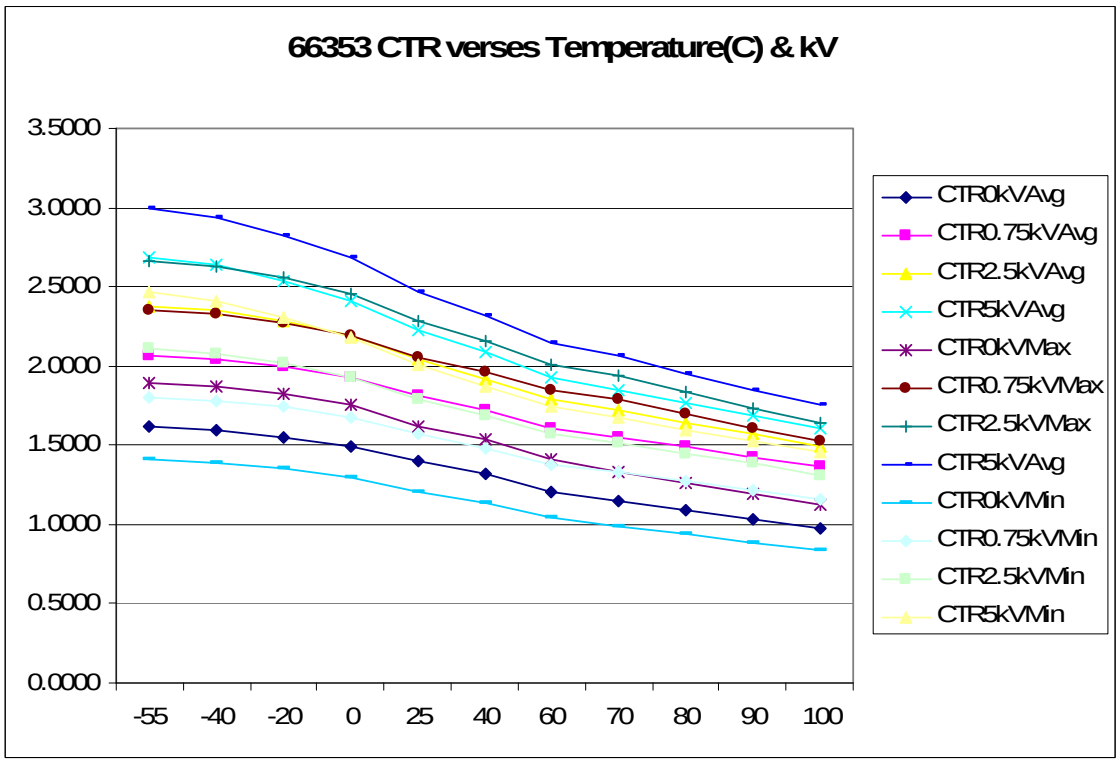

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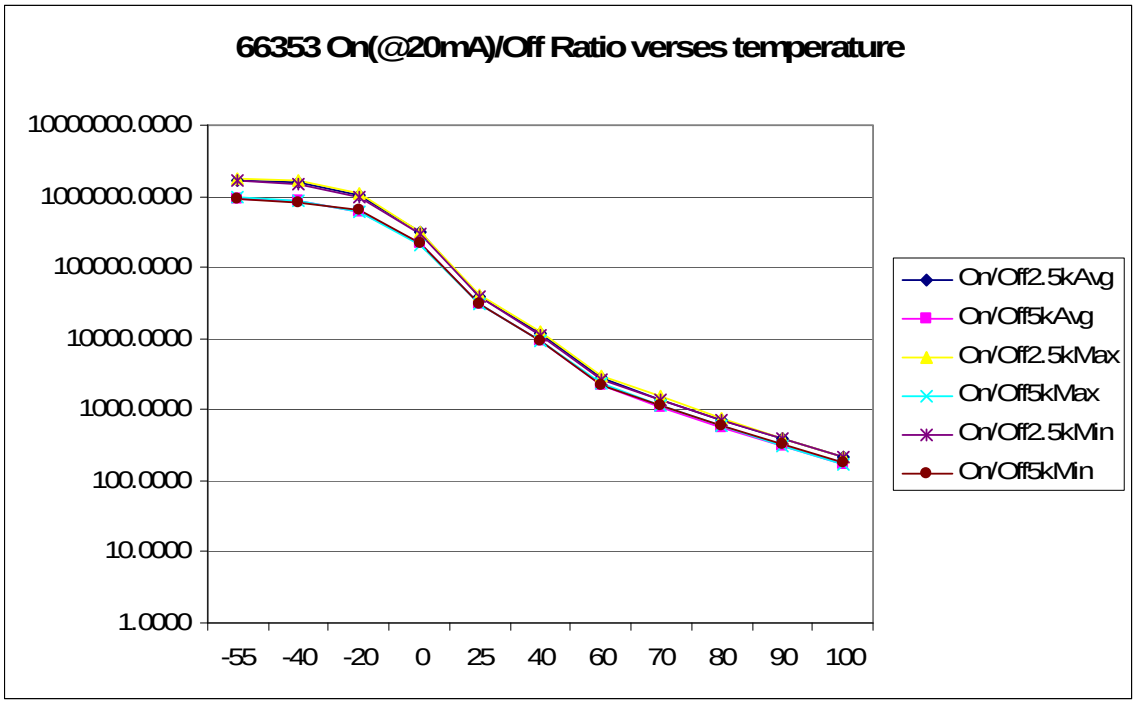

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Forward Current	I_F		20	mA
Operating Temperature	T_A	-40	100	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66353-002	6 KV Commercial, non-vented case
66353-012	6 KV Commercial, vented case
66353-300	6 KV Screened to space level, modified MIL-PRF-38534, non-vented case
66353-310	6 KV Screened to space level, modified MIL-PRF-38534, vented case