



# FOD3180

## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
T <sub>STG</sub>	Storage Temperature	-40 to +125	°C
T <sub>OPR</sub>	Operating Temperature	-40 to +100	°C
T <sub>J</sub>	Junction Temperature	-40 to +125	°C
TSOL	Lead Solder Temperature	260 for 10 sec.	°C
I <sub>F(AVG)</sub>	Average Input Current (Note 1)	25	mA
I <sub>F(tr, ff)</sub>	LED Current Minimum Rate of Rise/Fall	250	ns
I <sub>F(TRAN)</sub>	Peak Transient Input Current (<1 μs Pulse Width, 300 pps)	1.0	A
V <sub>R</sub>	Reverse Input Voltage	5	V
I <sub>OH(PEAK)</sub>	"High" Peak Output Current (Note 2)	2.5	A
I <sub>OL(PEAK)</sub>	"Low" Peak Output Current (Note 2)	2.5	A
V <sub>CC</sub> - V <sub>EE</sub>	Supply Voltage	-0.5 to 25	V
V <sub>O(PEAK)</sub>	Output Voltage	0 to V <sub>CC</sub>	V
P <sub>O</sub>	Output Power Dissipation (Note 3)	250	mW
P <sub>D</sub>	Total Power Dissipation (Note 4)	295	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 linearly above +70°C free air temperature at a rate of 0.3 mA/°C.
2. The output currents I<sub>OH</sub> and I<sub>OL</sub> are specified with a capacitive current limited load = (3 x 0.01 μF) + 0.5 Ω, frequency = 8 kHz, 50% DF.
3. Derate linearly above +87°C, free air temperature at the rate of 0.77 mW/°C. Refer to Figure 13.
4. No derating required across operating temperature range.

## RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V <sub>CC</sub> - V <sub>EE</sub>	Power Supply	10 to 20	V
I <sub>F(ON)</sub>	Input Current (ON)	10 to 16	mA
V <sub>F(OFF)</sub>	Input Voltage (OFF)	-3.0 to 0.8	V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

# FOD3180

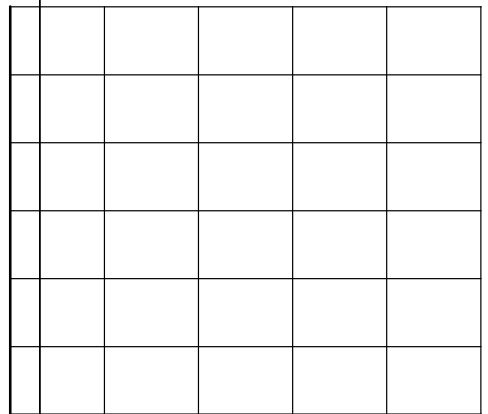
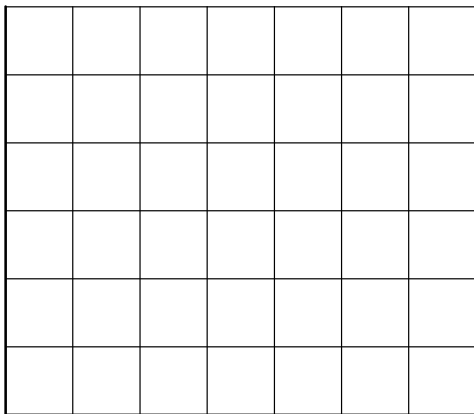
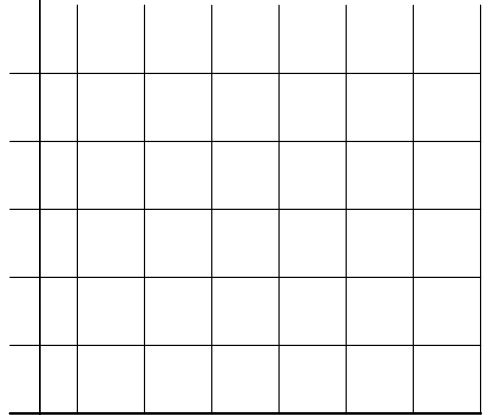
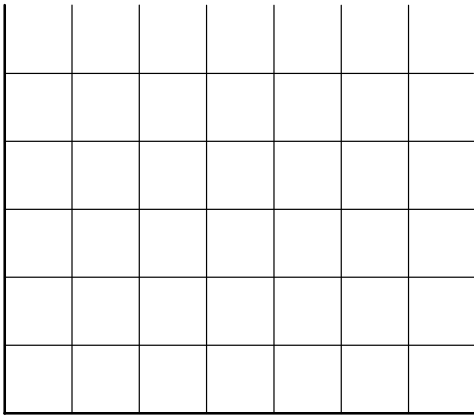
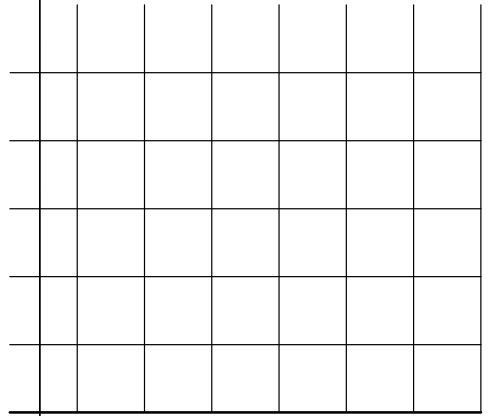
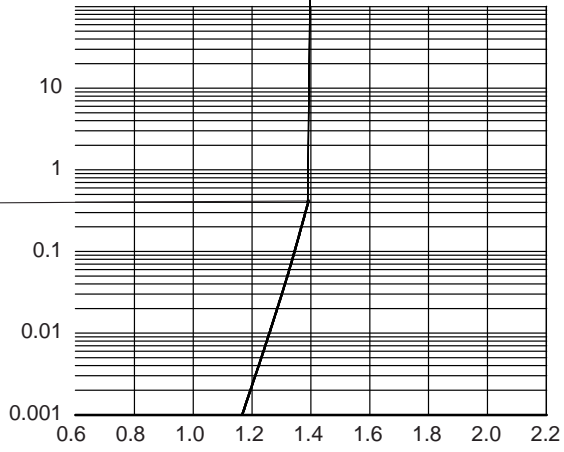
## ELECTRICAL–OPTICAL CHARACTERISTICS (DC) (Over recommended operating conditions unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min
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# FOD3180

## TYPICAL PERFORMANCE CURVES



# FOD3180

## TYPICAL PERFORMANCE CURVES (continued)

$C_G$

$I_F$  FORWARD LED CURRENT (mA)

REFLOW PROFILE

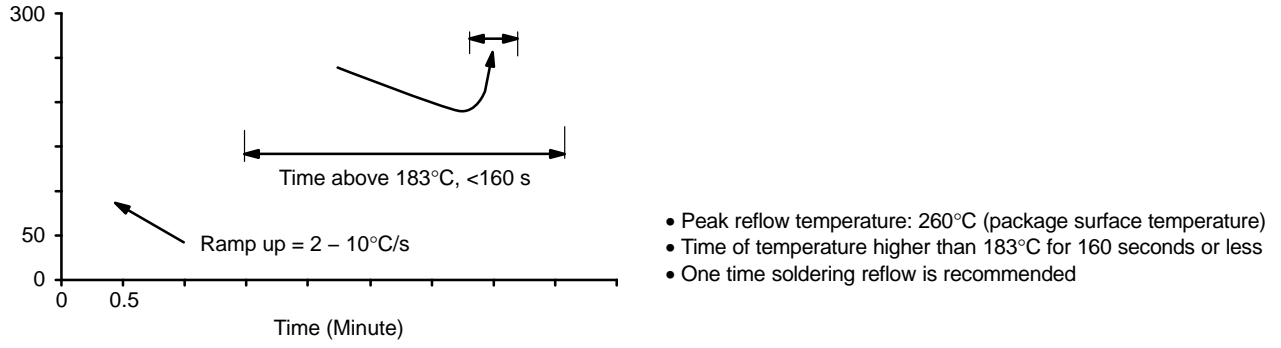


Figure 12. Reflow Profile

# FOD3180

## I<sub>OH</sub> AND I<sub>OL</sub> TEST CONDITIONS

This device is tested and specified when driving a complex reactive load. The load consists of a capacitor in the series with a current limiting resistor. The capacitor represents the gate to source capacitance of a power MOSFET transistor. The test load is a 0.03 μF capacitor in series with an 8.5 Ω resistor. The LED test frequency is 10.0 kHz with a 50% duty cycle. The combined I<sub>OH</sub> and I<sub>OL</sub> output load current duty factor is 0.6% at the test frequency.

Figure 15 illustrates the relationship of the LED input drive current and the device's output voltage and sourcing and sinking currents. The 0.03 μF capacitor load represents the gate to source capacitance of a very large power MOSFET transistor. A single supply voltage of 20 V is used in the evaluation.

Figure 16 shows the test schematic to evaluate the output voltage and sourcing and sinking capability of the device. The I<sub>OH</sub> and I<sub>OL</sub> are measured at the peak of their respective current pulses.

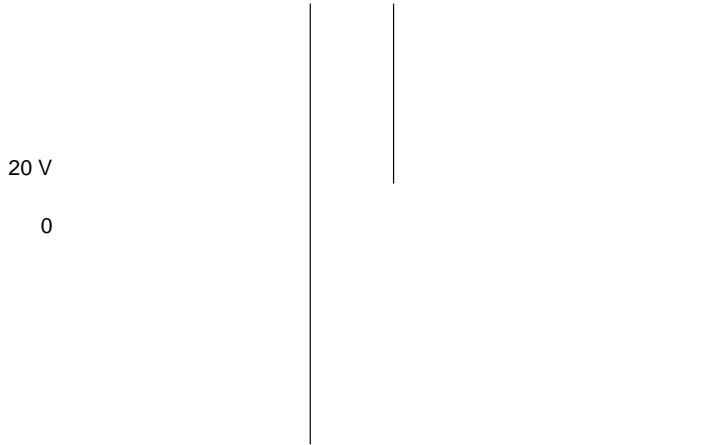


Figure 15. FOD 3180 Output Current and Output Voltage vs. LED Drive

Figure 16. Test Schematic



# FOD3180

## ORDERING INFORMATION

Option	Order Entry Identifier (Example)	Description†
No option	FOD3180	Standard Through Hole Device
S	FOD3180S	



PDIP8 9.655x6.6, 2.54P  
CASE 646CQ  
ISSUE O

DATE 18 SEP 2017

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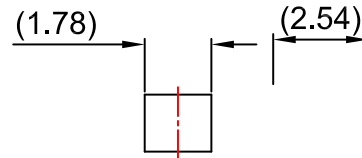
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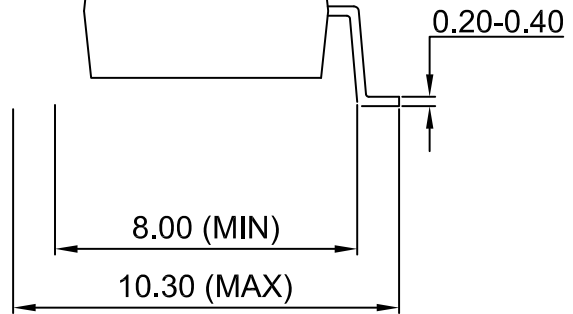
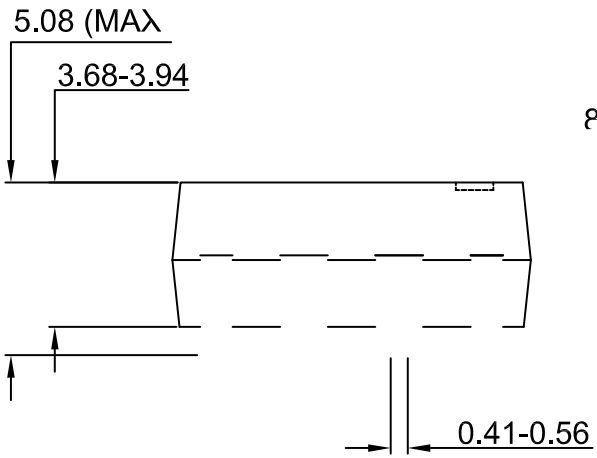
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**ISSUE O**

DATE 31 JUL 2016

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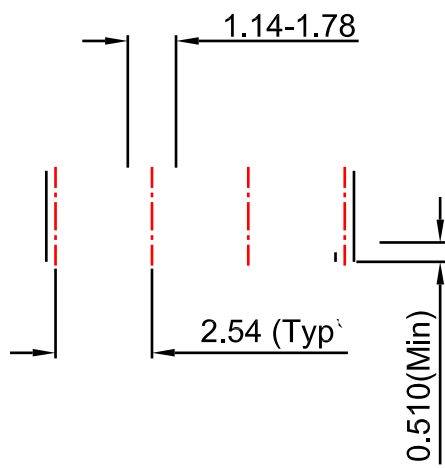


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