



What is the Required Current to Turn on the Solid-State Relay (VO1400AEFTR)

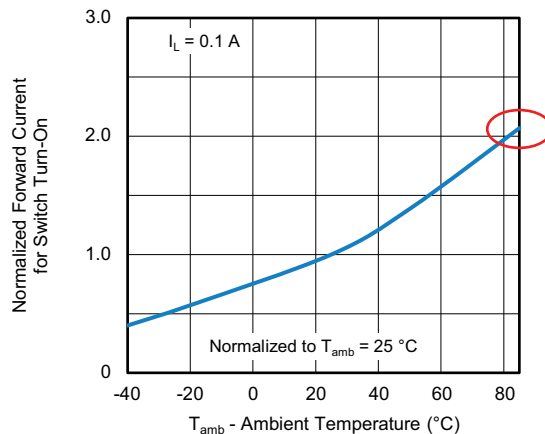
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To ensure reliable operation of the [VO1400AEFTR](#) solid-state relay (SSR) under **worst-case conditions** – including **maximum specified I_{Fon}** , **high temperature**, and **long term degradation** – you should calculate the required input current as follows:

Maximum I_{Fon} at 25 °C: $I_{Fon \text{ max. } 25 \text{ °C}} = 5 \text{ mA}$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25 \text{ °C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
LED forward current, switch turn-on	$I_L = 100 \text{ mA}$, $V_L \leq 0.5 \text{ V}$, $t = 10 \text{ ms}$	I_{Fon}	-	2.5	5	mA
LED forward current, switch turn-off	$I_L = 1 \text{ }\mu\text{A}$	I_{Foff}	0.4	2	-	mA
LED reverse current	$V_R = 5 \text{ V}$	I_R	-	-	1	μA
LED forward voltage	$I_F = 5 \text{ mA}$	V_F	0.8	1.2	1.5	V

Temperature Factor (at 85 °C): $I_{Fon \text{ max. } 85 \text{ °C}} = 5 \text{ mA} \times 2.1 = 10.5 \text{ mA}$



Add 20 % for Aging / Degradation: $I_{Fon \text{ total}} = 10.5 \text{ mA} / 0.8 = 13.125 \text{ mA}$

Required Current to Turn on the Solid-State Relay: $\geq 13.125 \text{ mA}$

You should **design for a minimum input current of 13.125 mA** to guarantee turn-on of the VO1400AEFTR SSR across the entire operating temperature range and over its expected lifetime.