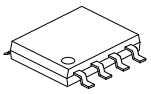
GF4141 **Preliminary** ***LINEAR INTEGRATED CIRCUIT***

LOW POWER GROUND FAULT INTERRUPTER



SOP-8

■ DESCRIPTION

The UTC **GF4141** is a low power controller for AC receptacle ground fault circuit interrupters. These devices detect hazardous current paths to ground and ground to neutral faults. The circuit interrupter then disconnects the load from the line before a harmful or lethal shock occurs. It is powered only during the positive half period of the line voltage, but can sense current faults independent of its phase relative to the line voltage. The simple layout and minimum component count insure ease of application and long term reliability.

■ FEATURES

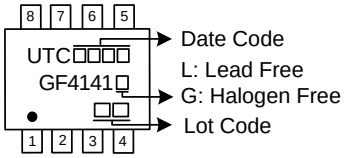
* Powered from the AC line
* Low quiescent current
* Built-in diode rectifier
* Direct interface to SCR
* Precision sense amplifier
* Time delay
* For use with 110V or 220V systems

■ ORDERING INFORMATION

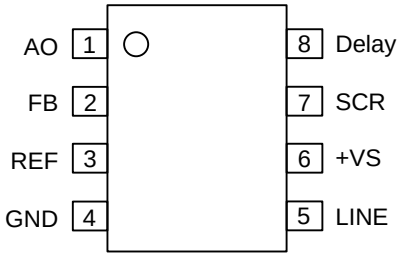
Ordering Number		Package	Packing
Lead Free	Halogen Free		
GF4141L-S08-R	GF4141G-S08-R	SOP-8	Tape Reel

GF4141G-S08-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



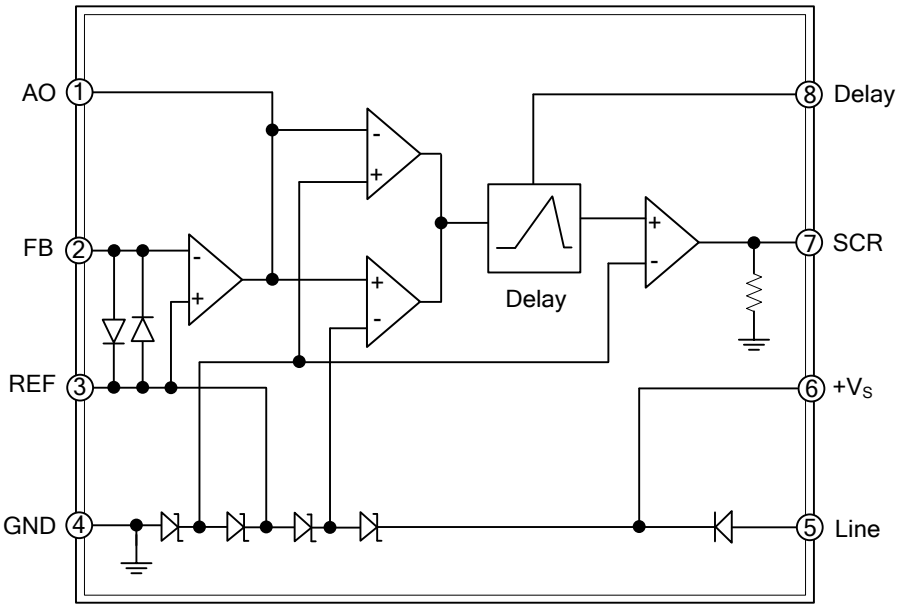
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	AO	Sense Amplifier Output
2	FB	Sense amplifier negative input
3	REF	Reference Voltage
4	GND	Ground
5	Line	AC line
6	$+V_S$	Supply input for GF4141 circuitry
7	SCR	Output for triggering external SCR when a fault is detected
8	Delay	Connect an external capacitance and set the delay time

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Current	I_{CC}	10	mA
Power Dissipation	P_D	500	mW
Junction Temperature	T_J	125	°C
Operating Temperature	T_{OPR}	-20 ~ +85	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

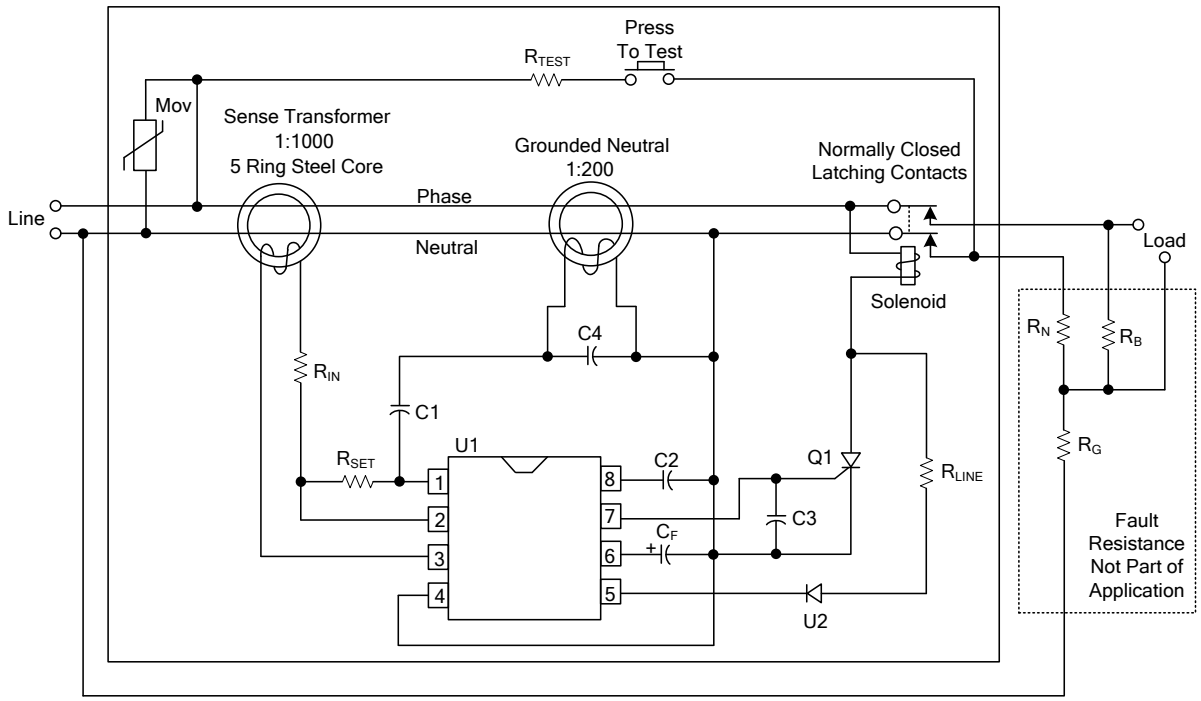
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	240	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SHUNT REGULATOR (Pins 5 to 4)						
Regulated Voltage	V_{REG}	I_{LINE}=750 μA	24.0	26.0	29.0	V
Quiescent Current	I_Q	V_{5-4}=24V		500		μA
Sense Amplifier (Pins 2 to 3)						
Offset Voltage	V_{OS}		-200	0	200	μV
SCR Trigger (Pins 7 to 4)						
Output Voltage	V_O		0	0.1	10	mV
Output Voltage			2.4	3.0	4.0	V
Output Current	I_O	V_{7-4}=0V, I_{2-3}=11μA	400	600		μA
Reference Voltage (Pins 3 to 4)						
Reference Voltage	V_{REF}	I_{LINE}=750μA	12.0	12.5	14.0	V
Delay Timer (Pins 8 to 4)						
Delay Time	t_{DELAY}	C_{8-4}=12nF		2.0		ms
Delay Current			30	40	55	μA

■ TYPICAL APPLICATION CIRCUIT



BOM

Reference	Component	Reference	Component
C1	10nF	R_{TEST}	15K
C2	12nF	R_{IN}	470
C3	10nF	R_{SET}	1.1 Meg
C4	1000pF	R_{LINE}	24K 1W
C_F	1µF 35V	R_G	1.6
Q1	TAG X0103DA	R_N	0.4
		R_B	20K
		U1	IC UTC **GF4141**
		U2	1N4004