NEC Electronics Inc.

μPC3423
OVERVOLTAGE "CROWBAR" SENSING CIRCUIT

Description

The μPC3423 is an overvoltage protection circuit (OVP) that protects sensitive electronic circuitry from overvoltage transients or regulator failures when used in conjunction with an external "crowbar" SCR.

Features

- ☐ Threshold voltage easily programmed by external resistors
- ☐ Programmable trip delay
- ☐ 300 mA output current
- ☐ Equivalent to MC3423

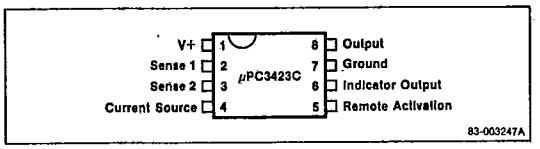
Ordering Information

Part Number	Package	Operating Temperature Range
μPC3423C	8-pin Plastic DIP	−20°C to +70°C

Recommended Operating Conditions

Parameter	Symbol	Limits Min	Typ	Max	Unit
Supply Voltage	V+	4.5		36	V
Output Current	I_O	0		300	mA
Indication Output Current	$I_{O(Ind)}$	0		10	mA

Pin Configuration



Absolute Maximum Ratings

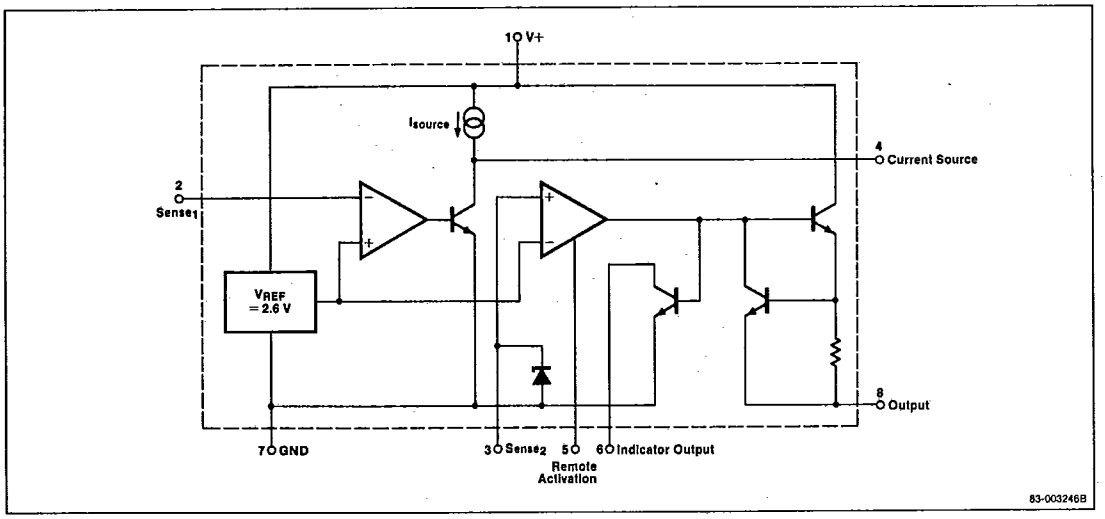
T_A = 25°C

Parameter	μPC3423	Unit
Supply Voltage	45	V
Sense Voltage	6.8	V
Remote Activation Input Voltage	7.0	V
Output Current	300	mA
Total Power Dissipation	600	mW
Operating Temperature Range	−20 to +70	°C
Storage Temperature Range	−40 to +125	°C

Comment: Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Equivalent Circuit

1/4 Circuit



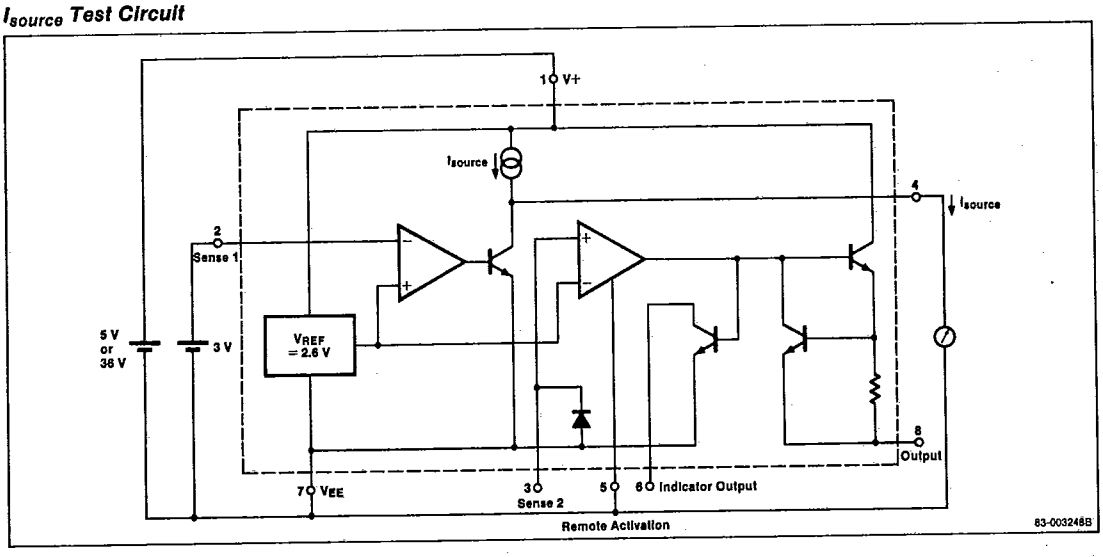
Electrical Characteristics

V+ = 5.0 V, T_A +25°C

Parameter	Symbol	Limits Min	Typ	Max	Unit	Test Conditions
Output Voltage	V_O	V+ − 2.2	V+ − 1.8		V	I_O = 100 mA
Indication Output Voltage	$V_{OL(Ind)}$		0.2	0.4		$I_{O(Ind)}$ = 8 mA
Sense Voltage (1), (2)	V_{sense1} V_{sense2}	2.4	2.6	2.8	V	
Sense Voltage Drift	$\Delta V_{sense}/\Delta T$		−0.04		%/°C	−20°C ≤ T_A ≤ +70°C
Remote Activation Input Current	I_{IH}		0.1	40	μA	V_{IH} = 2.0 V
Remote Activation Input Current	I_{IL}		−250		μA	V_{IL} = 0.8 V
Source Current	I_{source}		300		μA	See Test Circuit
Output Current Rise Time	t_r		400		mA/μs	I_O = 100 mA
Propagation Delay	t_{pd}		0.5		μs	
Supply Current	I_{CC}		5.0	8.0	mA	pin 5 grounded, other terminals open

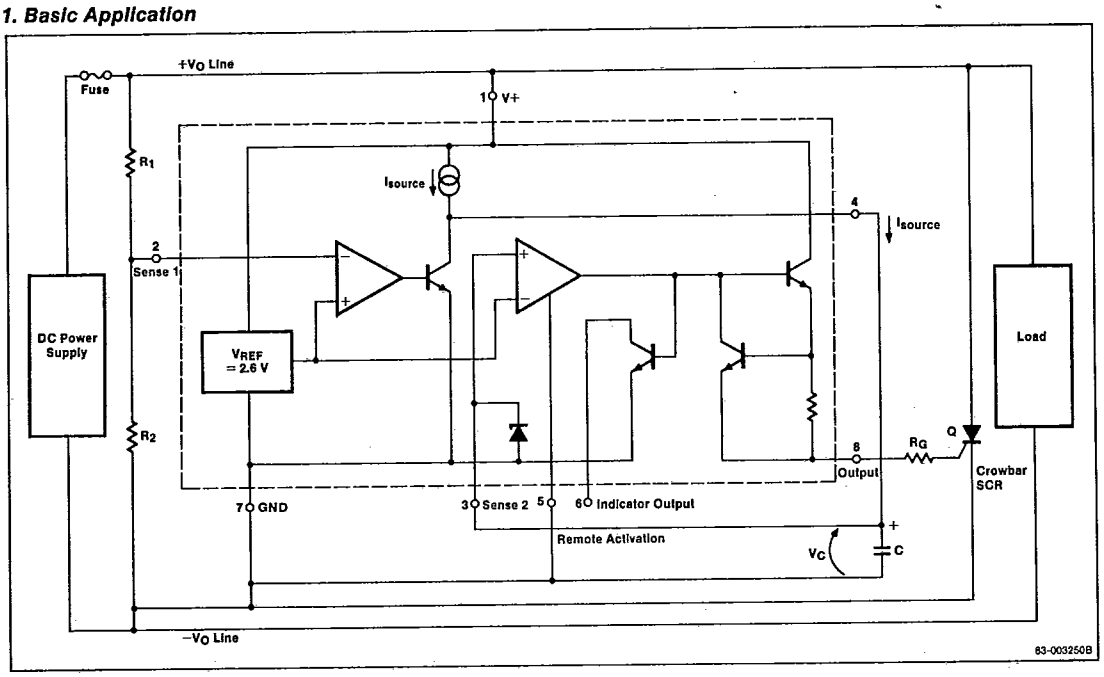
Test Circuit

I_{source} Test Circuit



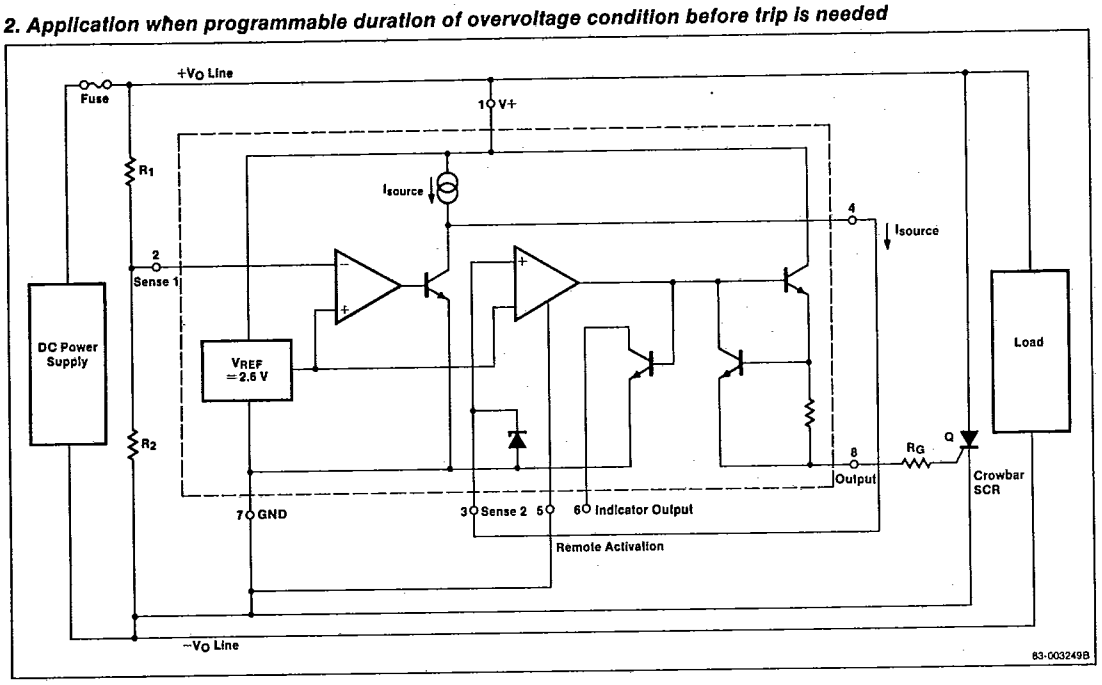
Typical Applications

1. Basic Application

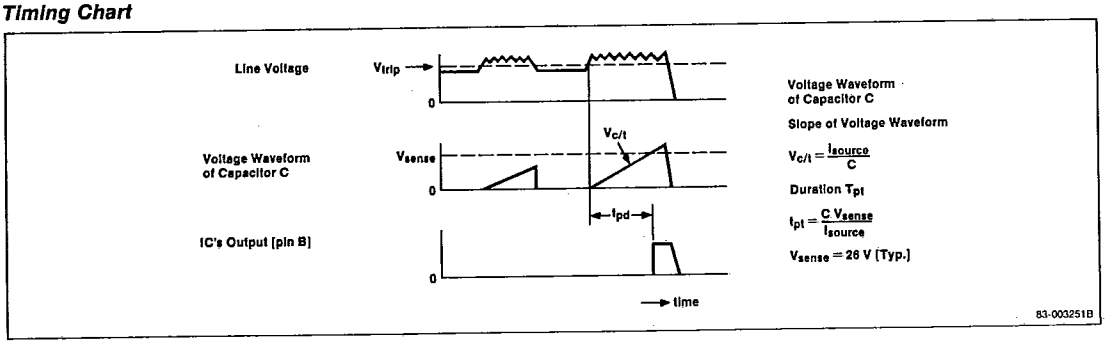


Typical Applications (Cont.)

2. Application when programmable duration of overvoltage condition before trip is needed



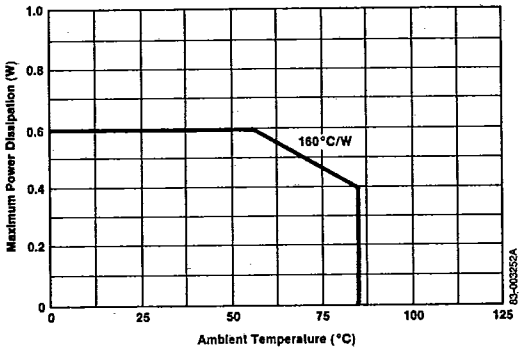
Timing Chart



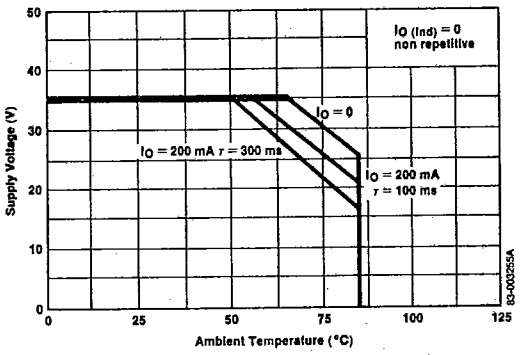
Operating Characteristics

$T_A = 25°C$

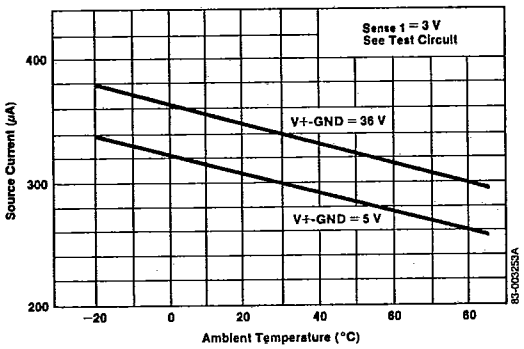
Maximum Power Dissipation



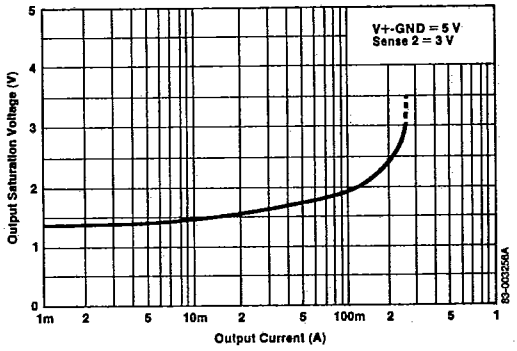
Supply Voltage vs. Ambient Temperature



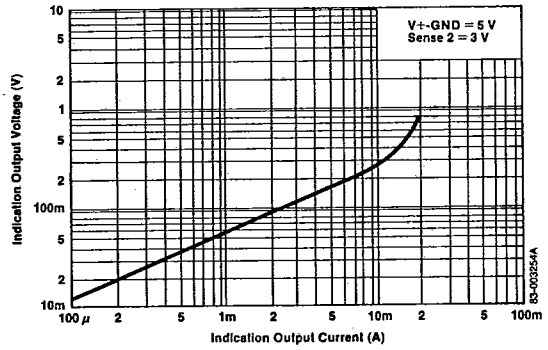
Source Current vs. Ambient Temperature



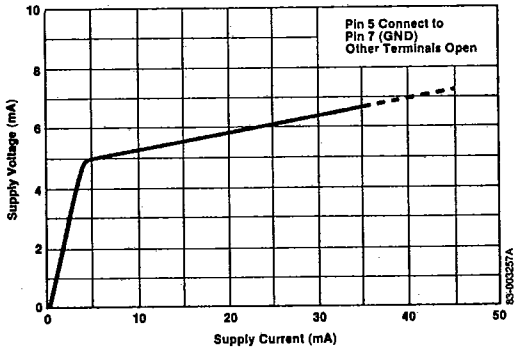
Output Saturation Voltage vs. Output Current



Indication Output Voltage vs. Output Current



Supply Current vs. Supply Voltage



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Operating Characteristics (Cont.)

$T_A = 25°C$

Supply Current
vs. Ambient Temperature