SILICON GENERAL

LINEAR INTEGRATED CIRCUITS

HIGH-CURRENT NPN TRANSISTOR ARRAYS

DESCRIPTION

The SG 3183 series of arrays consists of five, closely-matched, high-current NPN transistors. Although sharing a common monolithic substrate, the transistors are connected such that all terminals are independent, including the substrate bias connector. With current capability to 100mA per transistor, these arrays are ideally suited for all types of driving applications including relays, lamps, and thyristors.

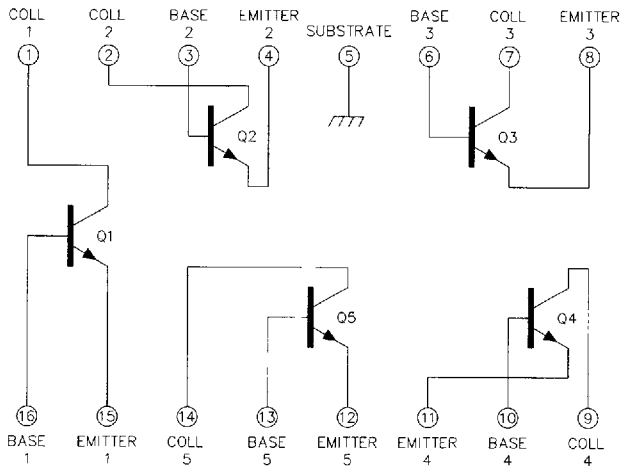
FEATURES

- **High voltage capability**
- **Collector current to 100mA**
- **Low saturation voltage**
- **Closely matched parameters**

HIGH RELIABILITY FEATURES - SG3183

- ♦ **Available to MIL-STD-883**
- ♦ **SG level "S" processing available**

BLOCK DIAGRAM



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April 1990

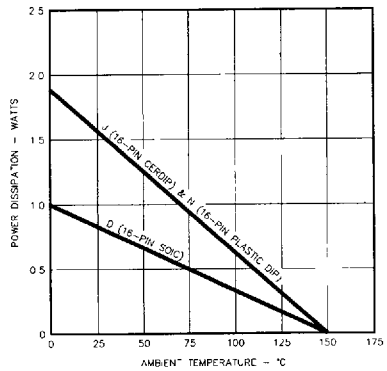
ABSOLUTE MAXIMUM RATINGS (Note 1)

Maximum Collector Current 100mA
Maximum Base Current 20mA
Power Dissipation
  Any One Transistor 500mW
  Total Package 750mW

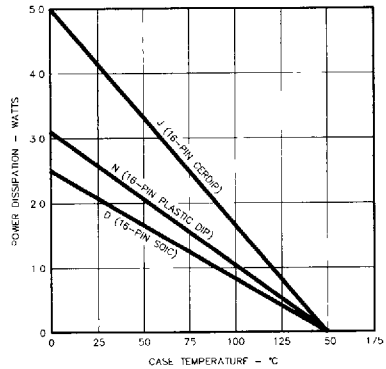
Operating Junction Temperature
  Hermetic (J-Packages) ..... 150°C
  Plastic (N, D-Package) ..... 150°C
Storage Temperature Range ..... -65°C to 150°C
Lead Temperature (Soldering, 10 Seconds) ..... 300°C

Note 1 Exceeding these ratings could cause damage to the device.

THERMAL DERATING CURVES



MAXIMUM POWER DISSIPATION vs AMBIENT TEMPERATURE



MAXIMUM POWER DISSIPATION vs CASE TEMPERATURE

RECOMMENDED OPERATING CONDITIONS (Note 2)

Operating Ambient Temperature
  SG3183 (J-Package) ..... -55°C to 125°C
  SG3183 (N, D-Package) ..... 0°C to 70°C

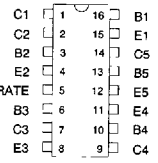
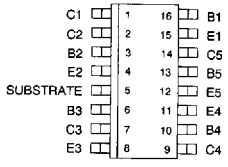
Note 2. Range over which the device is functional.

ELECTRICAL SPECIFICATIONS

(Unless otherwise specified, these specifications apply over the operating ambient temperatures of -55°C ≤ T_A ≤ 125°C for the SG3183 (J-package) and 0°C ≤ T_A ≤ 70°C for the SG3183 (N & D - packages). Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature)

Parameter	Test Conditions	SG3183 Min.	SG3183 Typ.	SG3183 Max.	Units
Breakdown Voltage					
Collector-Substrate (BV_{CSO})	I_C= 100µA	40	70		V
Collector-Base (BV_{CBO})	I_C= 100µA	40	70		V
Collector-Emitter (BV_{CEO})	I_C= 1mA	30	40		V
Emitter-Base (BV_{EBO})	I_E = 100µA	5.0	6.9		V
Collector Cutoff Current (I_{CEO})	V_{CE} = 10V			10	µA
Collector Cutoff Current (I_{CBO})	V_{CB} = 10V			1	µA
DC Forward Current Transfer Ratio (h_{FE})					
	V_{CE} = 3V, I_C = 10mA	40			
	T_A = 25°C	50	100		
	V_{CE} = 3V, I_C = 10mA	35			
	T_A = 25°C	40	75		
Collector–Emitter Saturation Voltage ($V_{CE(SAT)}$)	I_C = 50mA, I_B = 5mA		1.7	3.0	V
Base-to-Emitter Voltage (V_{BE})	V_{CE} = 3V, I_C = 10mA	0.50		0.95	V
	T_A = 25°C	0.65	0.75	0.85	V
For Q_1 and Q_2 Matched Pair:	V_{CE} = 3V, I_C = 1mA				
Input Offset Voltage (V_{IO})				10	mV
	T_A = 25°C		1.2	5.0	mV
Input Offset Current (I_{IO})				5.0	µA
	T_A = 25°C		0.7	2.5	µA

CONNECTION DIAGRAMS & ORDERING INFORMATION (See Notes Below)

Package	Part No.	Ambient Temperature Range	Connection Diagram
16-PIN CERAMIC DIP J - PACKAGE	SG3183J/883B SG3183J	-55°C to 125°C -55°C to 125°C	
16-PIN PLASTIC DIP N - PACKAGE	SG3183N	0°C to 70°C	
16-PIN SOIC D - PACKAGE	SG3183D	0°C to 70°C	

Note 1. Contact factory for JAN and DESC product availablity.
2 All packages are viewed from the top.