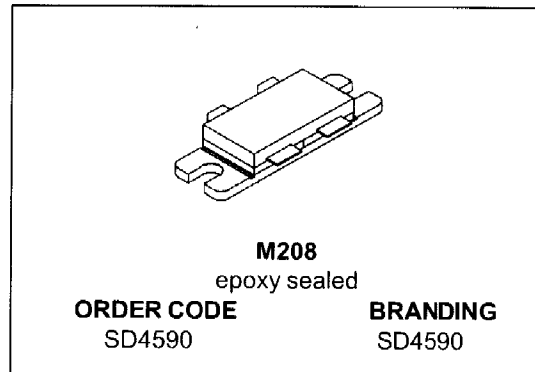


## SD4590

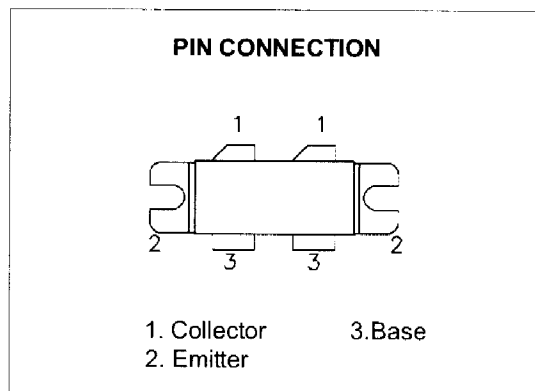
### RF POWER TRANSISTORS 800-960 MHz CELLULAR BASE STATION

- ✓ GOLD METALLIZATION
- ✓ DIFFUSED EMITTER BALLASTING
- ✓ INTERNAL INPUT/OUTPUT MATCHING
- ✓ COMMON EMITTER CONFIGURATION
- ✓ DESIGNED FOR LINEAR OPERATION HIGH SATURATED POWER CAPABILITY 26 VOLT, 900 MHz PERFORMANCE
- ✓  $P_{OUT} = 150$  W MIN.
- ✓ GAIN = 8.5 dB MIN.
- ✓  $IMD_3 = -28$  dB MAX. @  $P_{OUT} = 150$  W PEP
- ✓ INHERENT RUGGEDNESS:  
LOAD MISMATCH TOLERANCE OF 5:1 MIN. VSWR  
3 dB OVERDRIVE CAPABILITY



#### DESCRIPTION

The SD4590 is designed for both analog and digital cellular base stations over the 800 to 960 MHz frequency range, specifically those systems requiring the high linearity and efficiency afforded by class AB operation. Integrated input/output pre-matching simplifies amplifier design. Ruggedness, MTTF, and linearity are enhanced using diffused emitter resistors and refractory/gold metallization.



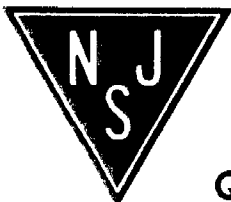
#### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25$ °C)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	65	V
$V_{CEO}$	Collector-Emitter Voltage	28	V
$V_{EBO}$	Emitter-Base Voltage	3.5	V
$I_c$	Device Current	25	A
$P_{DISS}$	Power Dissipation	300	W
$T_j$	Max. Operating Junction Temperature	200	°C
$T_{STG}$	Storage Temperature	-65 to 150	°C

#### THERMAL DATA

$R_{th(j-c)}$	Junction-Case Thermal Resistance	0.60	°C/W
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NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



## SD4590

### ELECTRICAL SPECIFICATION (T<sub>case</sub> = 25 °C)

#### STATIC

Symbol	Parameter		Min.	Typ.	Max.	Unit
BV <sub>CB0</sub>	I <sub>C</sub> = 100 mA	V <sub>BE</sub> = 0 V	65	80		V
BV <sub>CEO</sub>	I <sub>C</sub> = 100 mA	I <sub>B</sub> = 0 mA	28	30		V
BV <sub>CER</sub>	I <sub>C</sub> = 100 mA	R <sub>BE</sub> = 80 Ω	33	40		V
BV <sub>EBO</sub>	I <sub>C</sub> = 50 mA	I <sub>C</sub> = 0 mA	3.5	4.0		V
I <sub>CEO</sub>	V <sub>CE</sub> = 26 V	V <sub>BE</sub> = 0 V			10	mA
I <sub>CEO</sub>	V <sub>CE</sub> = 10 V	V <sub>BE</sub> = 0 V			0.5	mA
I <sub>EBO</sub>	V <sub>BE</sub> = 1 V	V <sub>CE</sub> = 0 V			0.1	mA
I <sub>EBO</sub>	V <sub>BE</sub> = 2.5V	V <sub>CE</sub> = 0 V			3	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 6 A	25	45	120	

TESTED PER SIDE

REF 1016365E

#### DYNAMIC

Symbol	Parameter		Min.	Typ.	Max.	Unit
C <sub>OB</sub>	f = 1 MHz	V <sub>CB</sub> = 26 V for information only - this part is collector matched		75		pF

#### DYNAMIC (CW)

Symbol	Parameter				Min.	Typ.	Max.	Unit
P <sub>IN</sub>	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W			21	W
P <sub>OUT</sub>	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>IN</sub> = 21 W	150	175		W
G <sub>P</sub>	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W	8.5	9.5		dB
η <sub>C</sub>	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W	50	55		%
P <sub>1dB</sub>	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA		150	160		W
OVD	f = 900 MHz	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	Set P <sub>OUT</sub> = 150 W PEP; Increase P <sub>IN</sub> 3dB	No Degradation in Device Performance			

#### DYNAMIC (Two-Tone)

Symbol	Parameter				Min.	Typ.	Max.	Unit
*G <sub>P</sub>	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W PEP		8.5	9.5		dB
*η <sub>C</sub>	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W PEP		30	35		%
*IMD <sub>3</sub>	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W PEP			-32	-28	dB
*Load Mismatch	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	P <sub>OUT</sub> = 150 W PEP	VSWR = 5:1 MIN @ All Phase Angles	No Degradation in Device Performance			
*OVD	V <sub>CE</sub> = 26 V	I <sub>CQ</sub> = 2x200 mA	Set P <sub>OUT</sub> = 150 W PEP; Increase P <sub>IN</sub> 3dB		No Degradation in Device Performance			

Note : f<sub>1</sub> = 900.00 MHz  
f<sub>2</sub> = 900.10 MHz

DIM.	mm			Inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.59		5.84	.200		.230
B		5.33			.210	
C	3.05		3.30	.120		.130
D	9.65		9.91	.380		.390
E	19.81		20.83	.780		.820
F		11.05			.435	
G		27.94			1.100	
H	33.91		34.16	1.335		1.345
I	0.08		0.18	.003		.007
J	1.52		1.78	.060		.070
K	2.08		2.54	.082		.100
L			5.21			.205
M	10.03		10.34	.395		.407
N	21.59		22.10	.850		.870

