New Jersey Semi-Conductor Products, Inc.

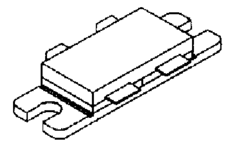
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

SD4590

RF POWER TRANSISTORS
800-960 MHz CELLULAR BASE STATION

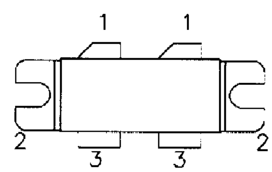
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLASTING
- INTERNAL INPUT/OUTPUT MATCHING
- COMMON EMITTER CONFIGURATION
- DESIGNED FOR LINEAR OPERATION HIGH SATURATED POWER CAPABILITY 26 VOLT, 900 MHz PERFORMANCE
- P_{OUT} =150 W MIN.
  GAIN = 8.5 dB MIN.
  IMD_3 = -28dB MAX. @ P_{OUT} = 150W PEP
- INHERENT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



M208
epoxy sealed

ORDER CODE	**BRANDING**
SD4590	SD4590

PIN CONNECTION



1. Collector
2. Emitter
3. Base

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

ELECTRICAL SPECIFICATION (T_{case} = 25 °C)

STATIC

Symbol	Parameter		Min.	Typ.	Max.	Unit
BV_{CBO}	I_C = 100 mA	V_{BE} = 0 V	65	80		V
BV_{CEO}	I_C = 100 mA	I_B = 0 mA	28	30		V
BV_{CER}	IC = 100 mA	R_{BE} = 80 Ω	33	40		V
BV_{EBO}	I_C = 50 mA	I_C = 0 mA	3.5	4.0		V
I_{CEO}	V_{CE} = 26 V	V_{BE} = 0 V			10	mA
I_{CEO}	V_{CE} = 10 V	V_{BE} = 0 V			0.5	mA
I_{EBO}	V_{BE} = 1 V	V_{CE} = 0 V			0.1	mA
I_{EBO}	V_{BE} = 2.5V	V_{CE} = 0 V			3	mA
h_{FE}	V_{CE} = 5V	I_C = 6 A	25	45	120	

TESTED PER SIDE

REF 1016365E

DYNAMIC

Symbol	Parameter	Min.	Typ.	Max.	Unit
C_{OB}	f = 1 MHz V_{CB} = 26 V for information only - this part is collector matched		75		pF

DYNAMIC (CW)

Symbol	Parameter	Min.	Typ.	Max.	Unit
P_{IN}	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W			21	W
P_{OUT}	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA P_{IN} = 21 W	150	175		W
G_P	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W	8.5	9.5		dB
η_C	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W	50	55		%
P_{1dB}	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA	150	160		W
OVD	f = 900 MHz V_{CE} = 26 V I_{CQ} = 2x200 mA Set P_{OUT} = 150 W PEP; Increase P_{IN} 3dB	No Degratation in Device Performance			

DYNAMIC (Two-Tone)

Symbol	Parameter	Min.	Typ.	Max.	Unit
*G_P	V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W PEP	8.5	9.5		dB
*η_C	V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W PEP	30	35		%
*IMD_3	V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W PEP		-32	-28	dBT
*Load Mismatch	V_{CE} = 26 V I_{CQ} = 2x200 mA P_{OUT} = 150 W PEP VSWR = 5:1 MIN @ All Phase Angles	No Degratation in Device Performance			
*OVD	V_{CE} = 26 V I_{CQ} = 2x200 mA Set P_{OUT} = 150 W PEP; Increase P_{IN} 3dB	No Degratation in Device Performance			

Note : f_1 = 900.00 MHz
f_2 = 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