



# SD1414-12

## RF & MICROWAVE TRANSISTORS 800-900 MHz APPLICATIONS

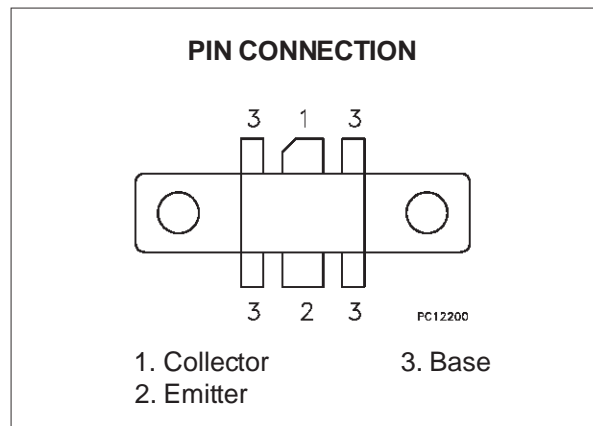
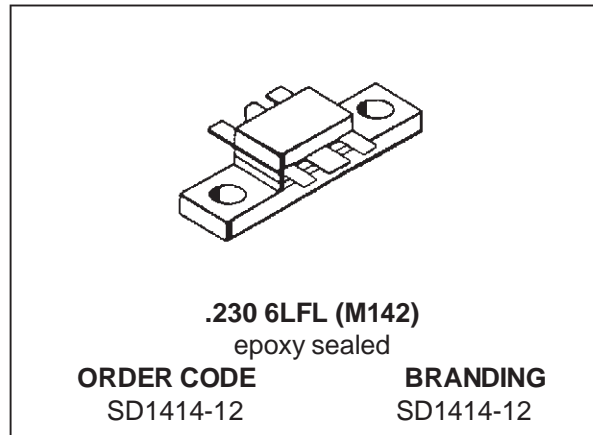
PRELIMINARY DATA

- 960 MHz
- 13.5 VOLTS
- COMMON BASE
- $P_{OUT} = 40$  W MIN. WITH 4.3 dB gain

### DESCRIPTION

The SD1414-12 is a 13.5 V Class C Epitaxial silicon NPN planar transistor designed for amplifier applications up to 960 MHz.

Internal input matching and common base configuration assure optimum gain and efficiency in broad band applications.



### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ )

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	36	V
$V_{CEO}$	Collector-Emitter Voltage	18	V
$V_{CES}$	Collector-Emitter Voltage	36	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	9.0	A
$P_{DISS}$	Power Dissipation	150	W
$T_j$	Max. Operating Junction Temperature	+200	$^{\circ}C$
$T_{STG}$	Storage Temperature	-65 to 150	$^{\circ}C$

### THERMAL DATA

$R_{th(j-c)}$	Junction-Case Thermal Resistance	1.2	$^{\circ}C/W$
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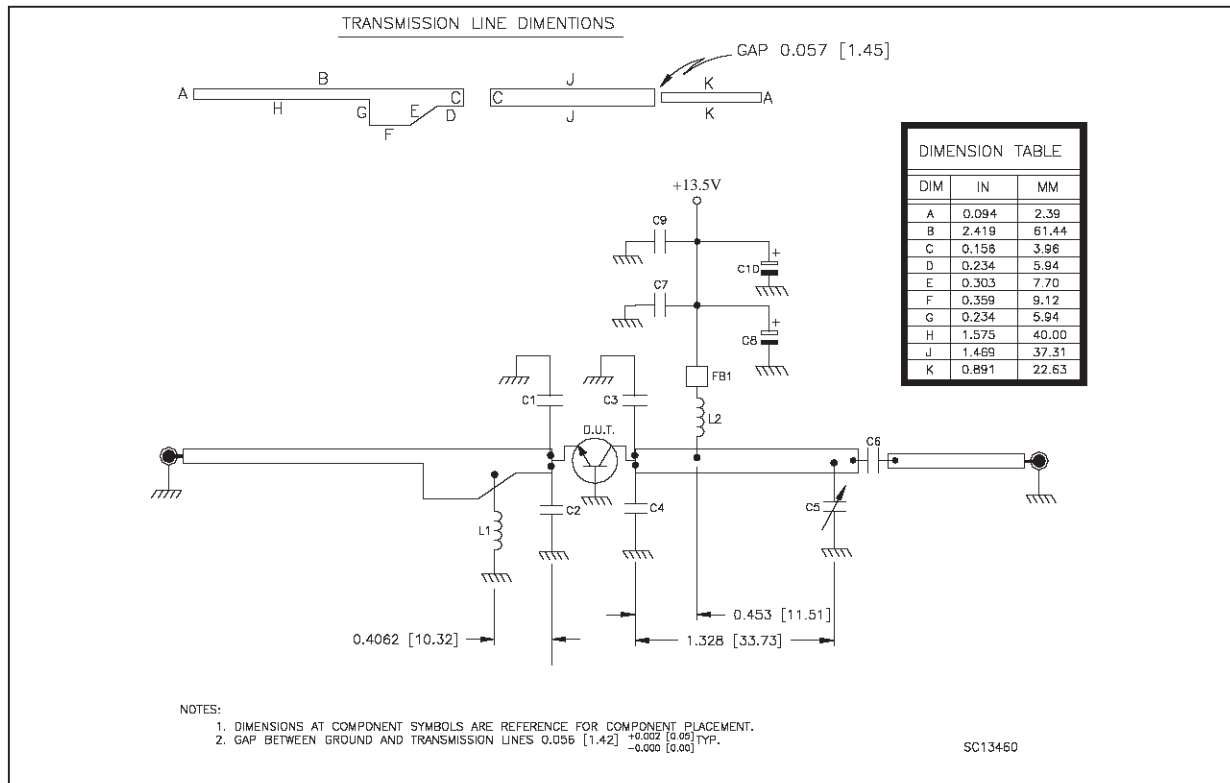
**ELECTRICAL SPECIFICATION** ( $T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ )**STATIC**

Symbol	Parameter		Min.	Typ.	Max.	Unit
$BV_{\text{CES}}$	$I_{\text{C}} = 50\text{ mA}$	$V_{\text{BE}} = 0\text{ V}$	36			V
$BV_{\text{CEO}}$	$I_{\text{C}} = 50\text{ mA}$	$I_{\text{B}} = 0\text{ mA}$	18			V
$BV_{\text{EBO}}$	$I_{\text{E}} = 10\text{ mA}$	$I_{\text{C}} = 0\text{ mA}$	4.0			V
$I_{\text{CBO}}$	$V_{\text{CB}} = 15\text{ V}$	$I_{\text{E}} = 0\text{ mA}$			5	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{ V}$	$I_{\text{C}} = 1\text{ A}$	20		200	

**DYNAMIC**

Symbol	Parameter			Min.	Typ.	Max.	Unit
$P_{\text{OUT}}$	$f = 960\text{ MHz}$	$P_{\text{IN}} = 15\text{ W}$	$V_{\text{CC}} = 13.5\text{ V}$	40			W
$G_{\text{P}}$	$f = 960\text{ MHz}$	$P_{\text{IN}} = 15\text{ W}$	$V_{\text{CC}} = 13.5\text{ V}$	4.3			dB
$\eta_{\text{C}}$	$f = 960\text{ MHz}$	$P_{\text{IN}} = 15\text{ W}$	$V_{\text{CC}} = 13.5\text{ V}$		50		%
Load Mismatch	$f = 960\text{ MHz}$	$P_{\text{IN}} = 15\text{ W}$	$V_{\text{CC}} = 15\text{ V}$ All Phases	10:1			VSWR
$C_{\text{OB}}$	$f = 1\text{ MHz}$	$V_{\text{CB}} = 13.5\text{ V}$			80		pF

## 960 MHz Test Circuit Schematic

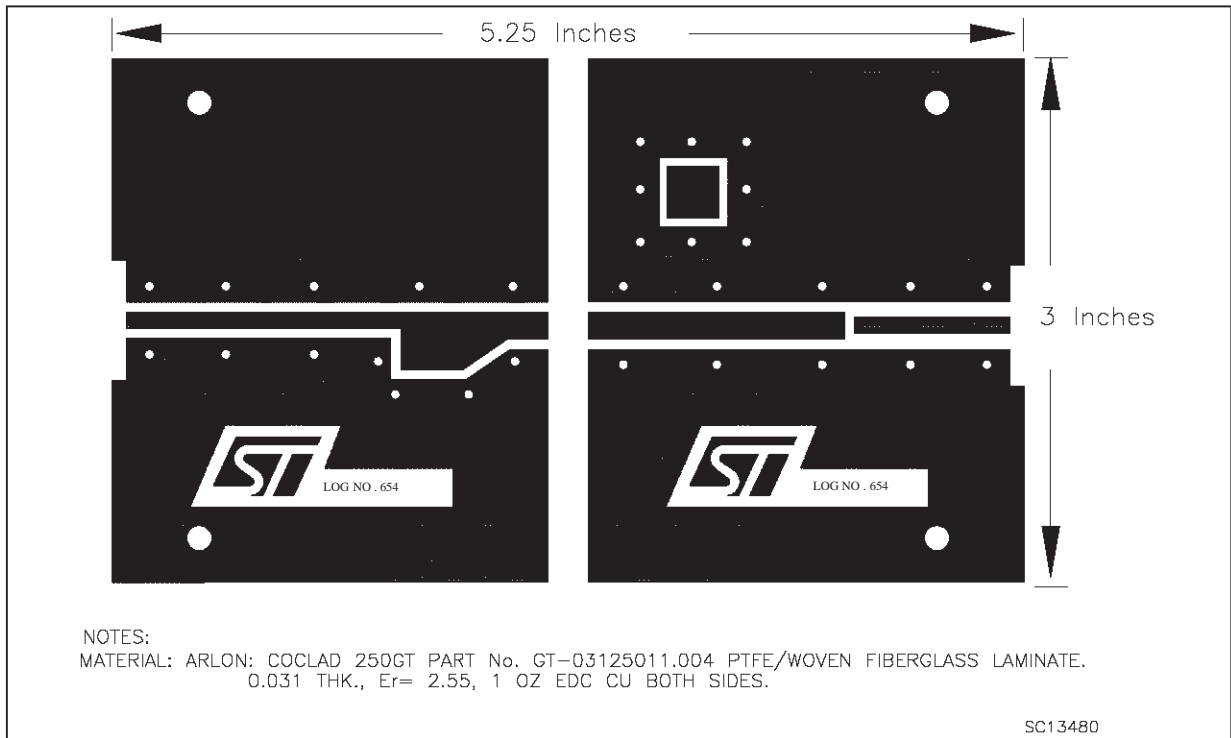


## 960 MHz Test Circuit Component Part List

C10	WGR680M1JG18V	MALLORY	68 $\mu$ F/63V ALUMINUM ELECTROLYTIC RADIAL LEAD CAPACITOR
C9	MCJ-101ED102J0	ARCO	1000pf/500V METAL CLAD SURFACE MOUNT CAPACITOR
C8	516D106M063JL6A	SPRAGUE	10 $\mu$ F/63V ALUMINUM ELECTROLYTIC AXIAL LEAD CAPACITOR
C7	CKR06BX104KR	KEMET	0.1 $\mu$ F/100V CERAMIC MOLDED RADIAL LEAD CAPACITOR
C6	ATC100B470KP500X	ATC	47pf ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C5	5401PC	JOHANSON	1.0-14pf STANDARD AIR DIELECTRIC VARIABLE CAPACITOR
C4	MUM-602ED150J0	ARCO	15pf METAL CLAD SURFACE MOUNT CAPACITOR
C3	MUM-602ED200J0	ARCO	20pf METAL CLAD SURFACE MOUNT CAPACITOR
C2	MUM-602ED110J0	ARCO	11pf METAL CLAD SURFACE MOUNT CAPACITOR
C1	MUM-602ED110J0	ARCO	11pf METAL CLAD SURFACE MOUNT CAPACITOR
FB1	2643000101	FAIR-RITE	SHIELD BEAD
L2	TYPE 8078	BELDEN	INDUCTOR, 10 TURN, AIR WOUND, I.D. 0.109 [2.77], 20AWG POLLY-COATED MAGNET WIRE
L1	TYPE 8078	BELDEN	INDUCTOR, 12 TURN, AIR WOUND, I.D. 0.080 [2.03], 24AWG POLLY-COATED MAGNET WIRE
ITEM	PART NO	VENDOR	DESCRIPTION

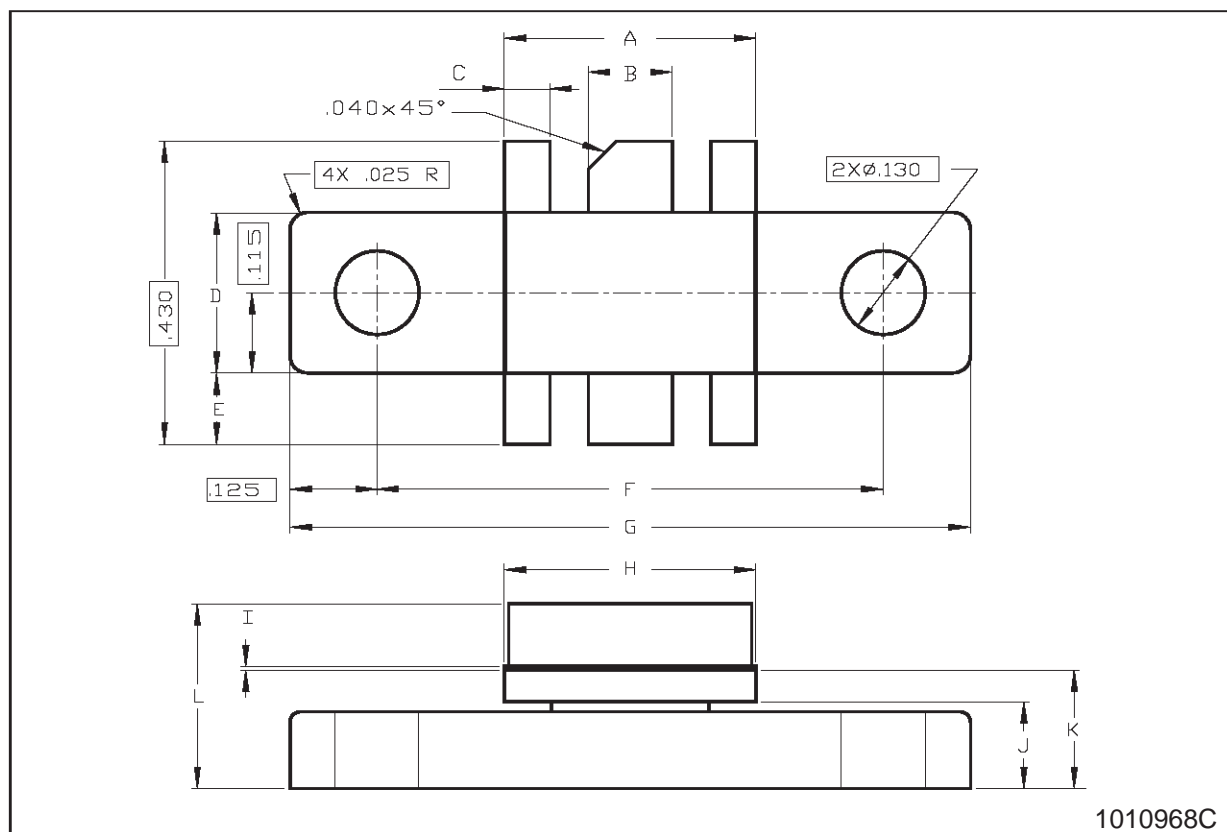
SC13470

960 MHz Test Circuit Photomaster



## M142 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	9.02		9.27	0.355		0.365
B	2.92		3.18	0.115		0.125
C	1.91		2.16	0.075		0.085
D	5.72		5.97	0.225		0.235
E	2.29		2.79	0.090		0.110
F	18.29		18.54	0.720		0.730
G	24.64		24.89	0.970		0.980
H	9.02		9.27	0.355		0.365
I	0.10		0.15	0.004		0.006
J	3.05		3.30	0.120		0.130
K	4.06		4.57	0.160		0.180
L	5.84		6.60	0.230		0.260



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