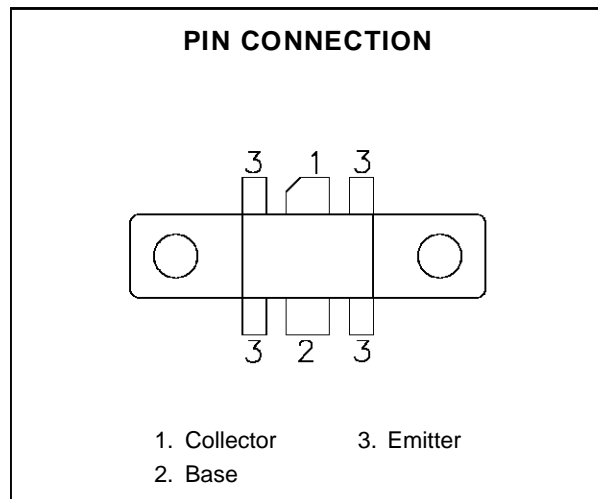
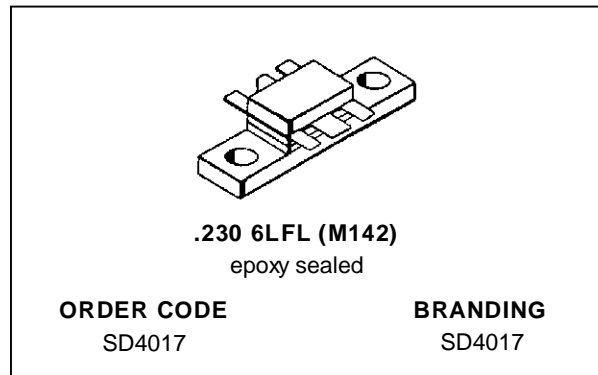


## RF & MICROWAVE TRANSISTORS 806-960 MHz CELLULAR BASE STATIONS

- GOLD METALLIZATION
- DIFFUSED EMITTER BALLASTING
- INTERNAL INPUT MATCHING
- DESIGNED FOR LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- COMMON EMITTER CONFIGURATION
- $P_{OUT} = 30$  W MIN. WITH 7.5 dB GAIN
- $\eta_C = 55\%$  TYPICAL
- TYPICAL LOAD MISMATCH CAPABILITY:  
20:1 ALL ANGLES RATED CONDITIONS  
10:1 ALL ANGLES @  $\pm 20\%$  RATED VOLTAGE
- TYPICAL OVERDRIVE SURVIVABILITY  
5 dB


**DESCRIPTION**

The SD4017 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity class AB operation for cellular base station applications.

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	48	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Collector-Supply Voltage	3.5	V
$P_{DISS}$	Power Dissipation	88	W
$I_C$	Device Current	7.5	A
$T_J$	Junction Temperature	200	$^{\circ}C$
$T_{STG}$	Storage Temperature	- 65 to +150	$^{\circ}C$

**THERMAL DATA**

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	2.0	$^{\circ}C/W$
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**SD4017****ELECTRICAL SPECIFICATIONS** ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

## STATIC

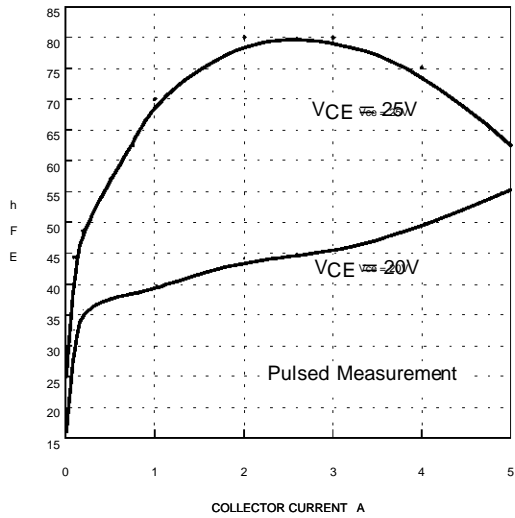
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 100 \text{ mA}$	48	55	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 10 \text{ mA}$	3.5	5	—	V
$BV_{\text{CEO}}$	$I_{\text{C}} = 40 \text{ mA}$	25	28	—	V
$BV_{\text{CER}}$	$I_{\text{C}} = 40 \text{ mA}$ $R_{\text{BE}} = 150 \ \Omega$	30	40	—	V
$I_{\text{CBO}}$	$V_{\text{CE}} = 24 \text{ V}$	10	—	—	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 20 \text{ V}$ $I_{\text{C}} = 2 \text{ A}$	15	40	100	—

## DYNAMIC

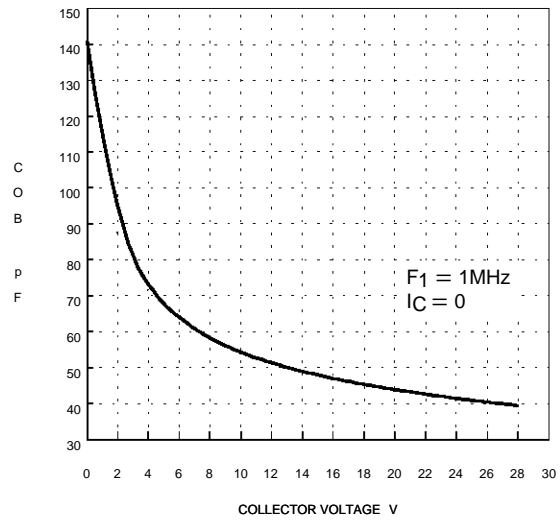
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 860 \text{ MHz}$ $V_{\text{CE}} = 25 \text{ V}$ $I_{\text{CQ}} = 60 \text{ mA}$	30	—	—	W
$\eta_{\text{c}}$	$f = 860 \text{ MHz}$ $V_{\text{CE}} = 25 \text{ V}$ $I_{\text{CQ}} = 60 \text{ mA}$	—	55	—	%
$P_{\text{G}}$	$f = 860 \text{ MHz}$ $V_{\text{CE}} = 25 \text{ V}$ $I_{\text{CQ}} = 60 \text{ mA}$	7.5	9	—	dB
$C_{\text{OB}}$	$V_{\text{CB}} = 25 \text{ V}$ $f_{\text{o}} = 1 \text{ MHz}$	—	42	—	pf
$\text{IMD}_3$	$P_{\text{OUT}} = 30 \text{ WPEP}$ $f_1 = 860.0 \text{ MHz}$ $f_2 = 860.1 \text{ MHz}$	—	-35	—	dBc
$\text{VSWR}_1$	$\text{VSWR} = 20:1$ $V_{\text{CE}} = 25 \text{ V}$ $\text{VSWR} = 10:1$ $V_{\text{CE}} = 25 \text{ V} \pm 20\%$	No Degradation in Output Device			Typ.
$\text{VSWR}_2$	$\text{VSWR} = 5:1$ $V_{\text{CE}} = 25 \text{ V} \pm 20\%$ $P_{\text{IN}} = P_{\text{IN}}(\text{norm}) + 3\text{dB}$	No Degradation in Output Device			Typ.
$\text{OVD}$	$P_{\text{IN}}(\text{norm}) = +5\text{dB}$ $V_{\text{CE}} = 25 \text{ V}$ $P_{\text{IN}}(\text{norm}) = +3\text{dB}$ $V_{\text{CE}} = 25 \text{ V} \pm 20\%$	No Degradation in Output Device			Typ.

TYPICAL PERFORMANCE

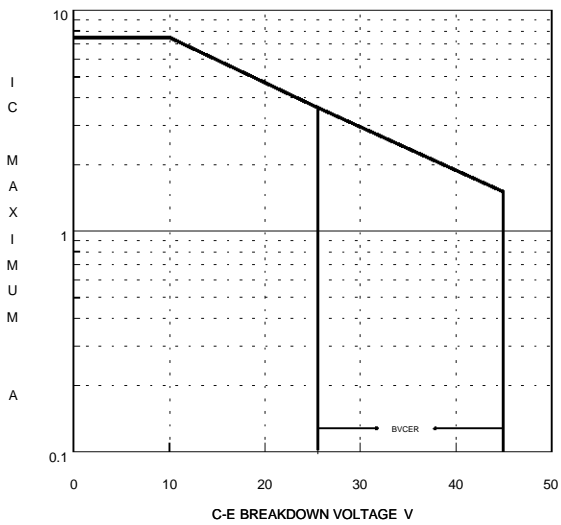
DC CURRENT GAIN vs COLLECTOR CURRENT



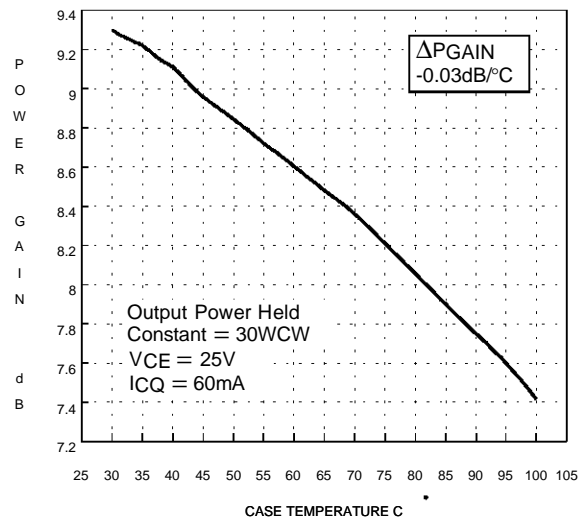
OUTPUT CAPACITANCE vs C-B VOLTAGE



DC SAFE OPERATING AREA

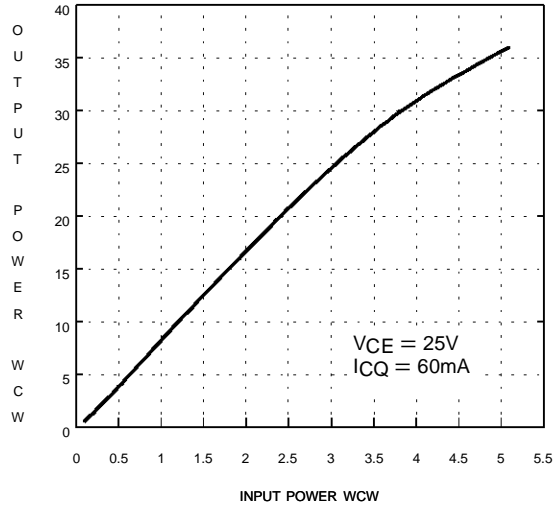


POWER GAIN vs CASE TEMPERATURE

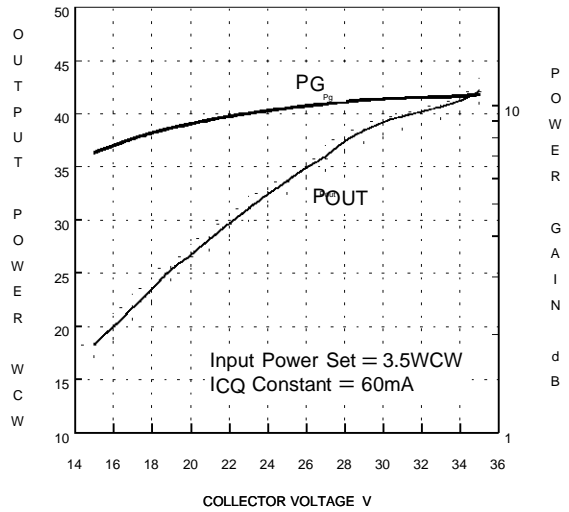


TYPICAL PERFORMANCE (cont'd)

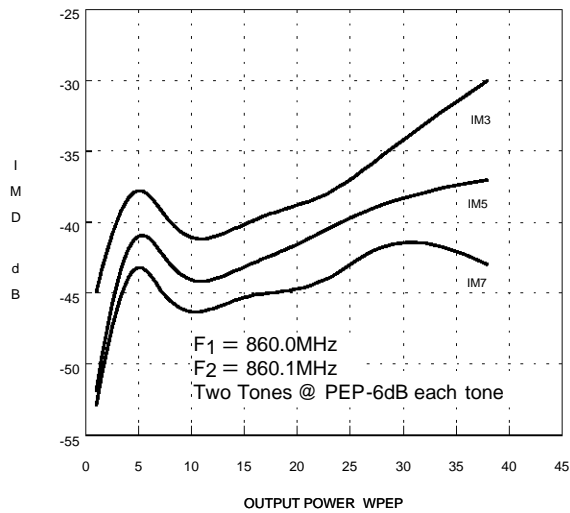
OUTPUT POWER vs INPUT POWER



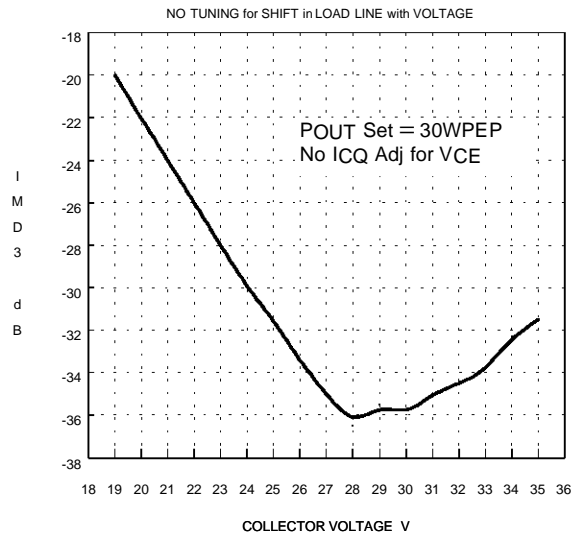
OUTPUT POWER & GAIN vs VOLTAGE



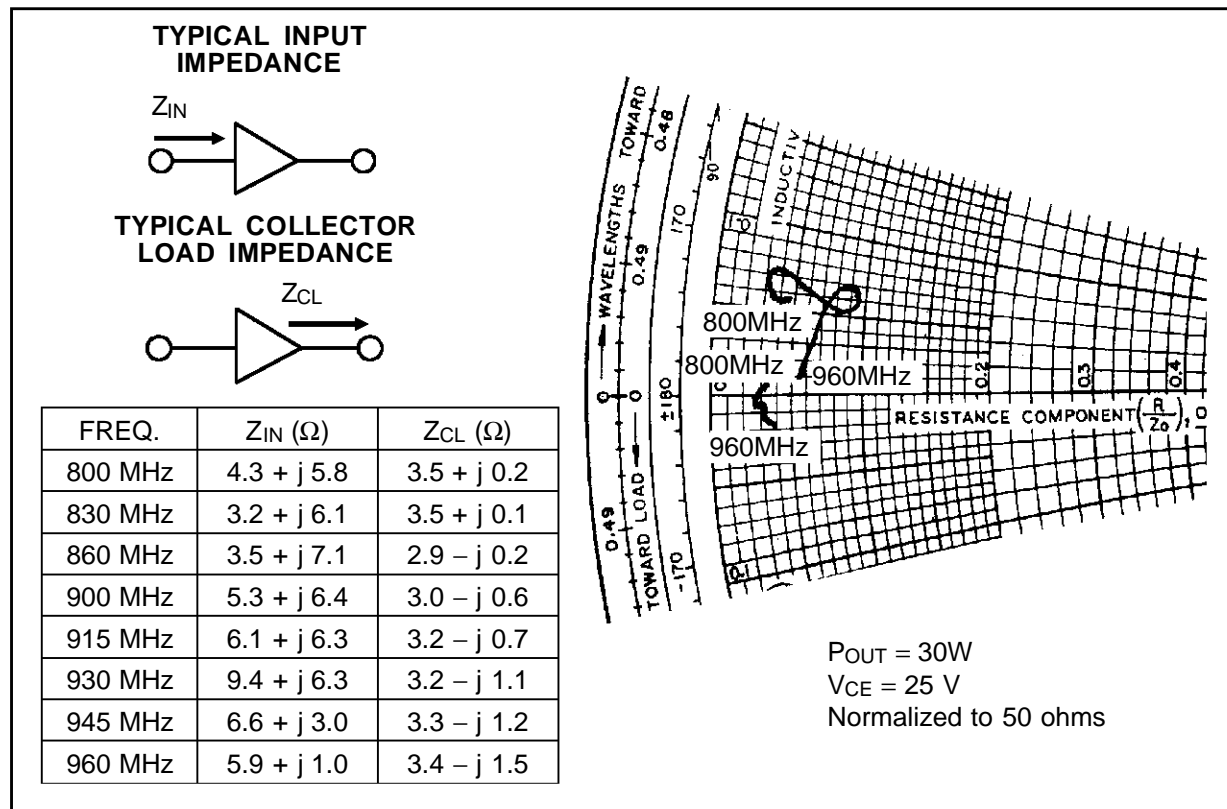
IM DISTORTION vs OUTPUT POWER



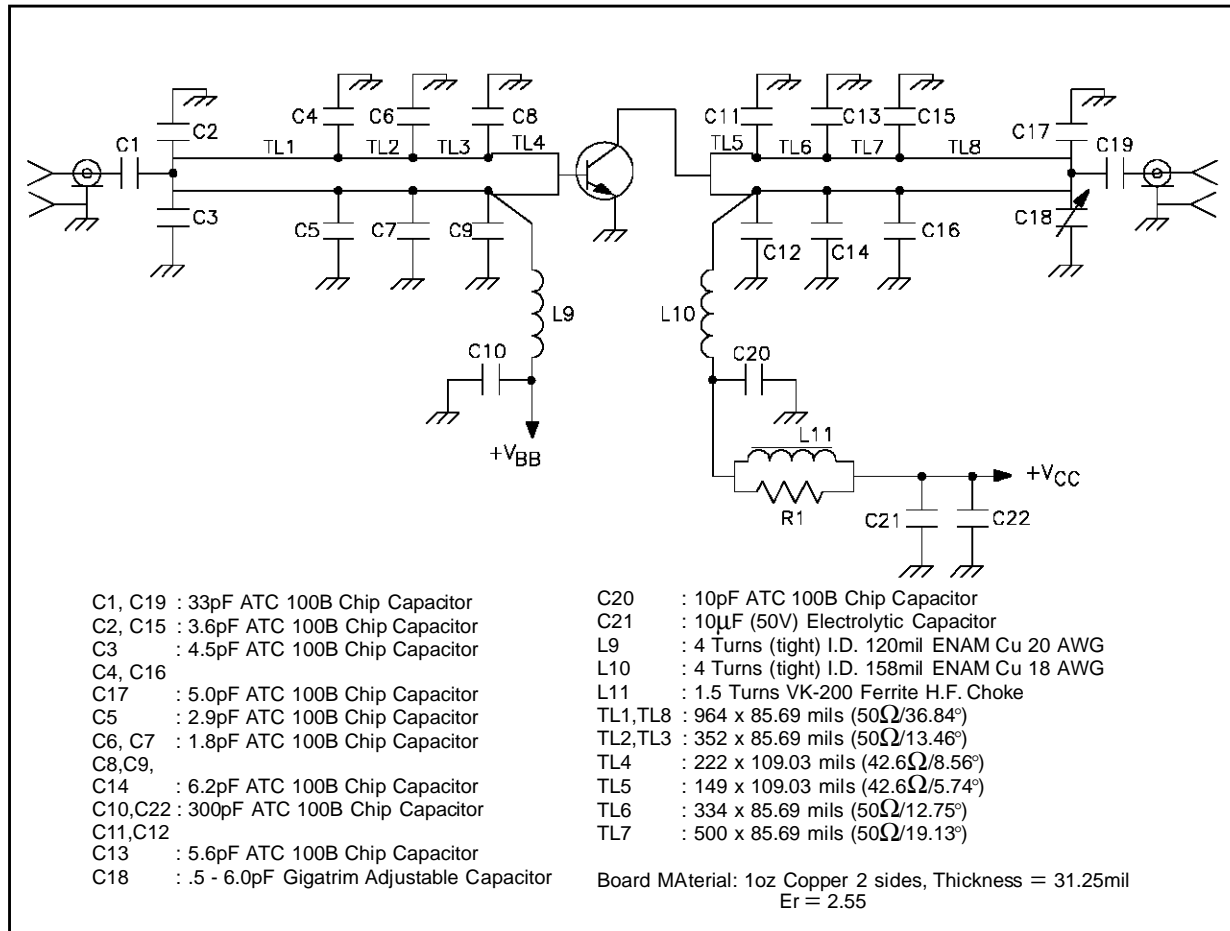
IM3 DISTORTION vs SUPPLY VOLTAGE



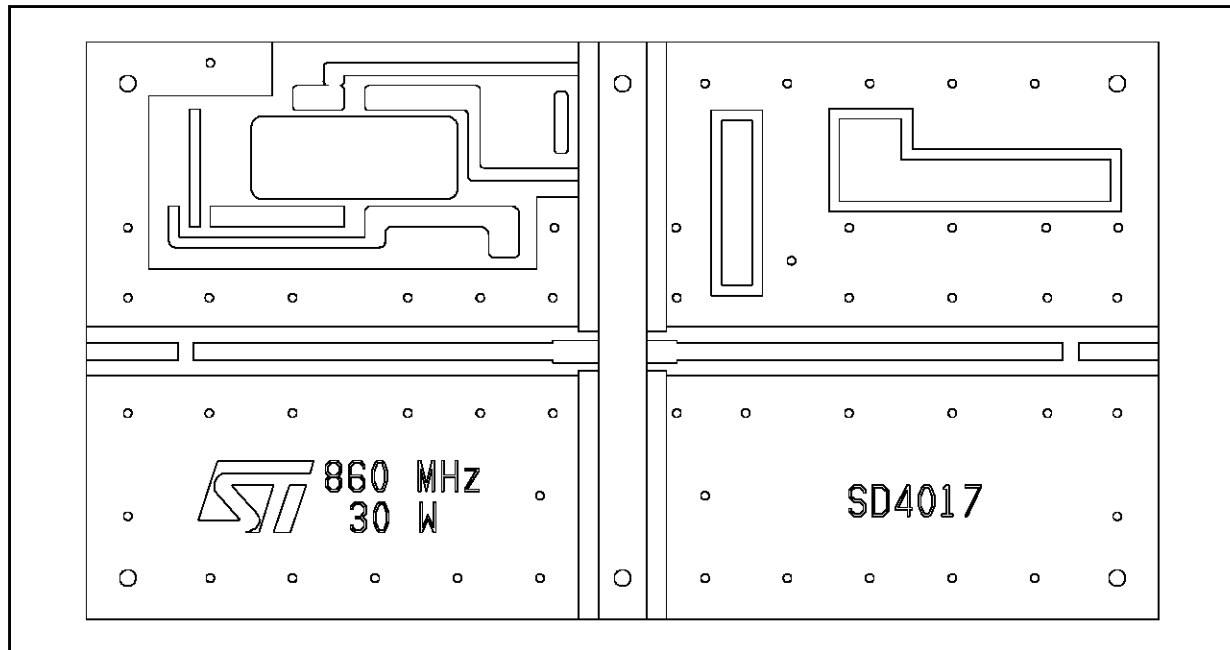
## IMPEDANCE DATA



TEST CIRCUIT

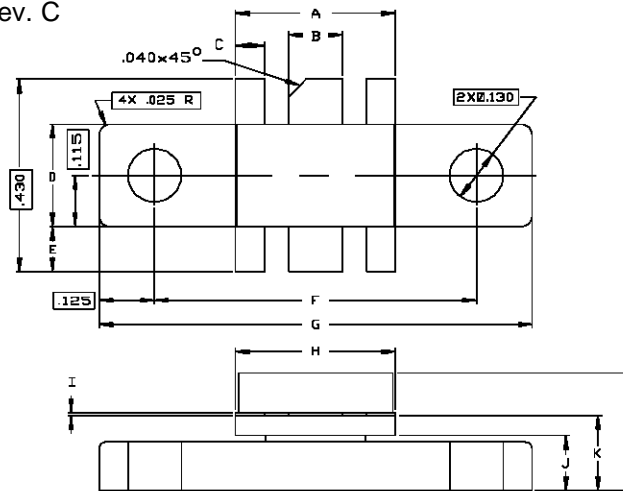


BOARD LAYOUT



## PACKAGE MECHANICAL DATA

Ref. Dwg.No. 12-0142 rev. C



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.355/9,02	.365/9,27	K	.160/4,06	.180/4,57
B	.115/2,92	.125/3,18	L	.230/5,84	.260/6,60
C	.075/1,91	.085/2,16			
D	.225/5,72	.235/5,97			
E	.090/2,29	.110/2,79			
F	.720/18,29	.730/18,54			
G	.970/24,64	.980/24,89			
H	.355/9,02	.365/9,27			
I	.004/0,10	.006/0,15			
J	.120/3,05	.130/3,30			

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