

**CMPT3646**  
**SURFACE MOUNT**  
**NPN SILICON TRANSISTOR**



**SOT-23 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMPT3646 type is an NPN silicon transistor manufactured by the epitaxial planar process, epoxy molded in a surface mount package, designed for ultra high speed switching applications.

**MARKING CODE: C2R**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$ )

Collector-Base Voltage
Collector-Emitter Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Power Dissipation
Operating and Storage Junction Temperature
Thermal Resistance

**SYMBOL**

$V_{CBO}$	40
$V_{CES}$	40
$V_{CEO}$	15
$V_{EBO}$	5.0
$I_C$	200
$P_D$	350
$T_J, T_{stg}$	-65 to +150
$\theta_{JA}$	357

**UNITS**

V
V
V
V
mA
mW
$^\circ\text{C}$
$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_{CES}$	$V_{CE}=20\text{V}$		0.5	$\mu\text{A}$
$I_{CES}$	$V_{CE}=20\text{V}, T_A=65^\circ\text{C}$		3.0	$\mu\text{A}$
$BV_{CBO}$	$I_C=100\mu\text{A}$	40		V
$BV_{CES}$	$I_C=10\mu\text{A}$	40		V
$BV_{CEO}$	$I_C=10\text{mA}$	15		V
$BV_{EBO}$	$I_E=100\mu\text{A}$	5.0		V
$V_{CE(SAT)}$	$I_C=30\text{mA}, I_B=3.0\text{mA}$		0.20	V
$V_{CE(SAT)}$	$I_C=30\text{mA}, I_B=3.0\text{mA}, T_A=65^\circ\text{C}$		0.30	V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		0.28	V
$V_{CE(SAT)}$	$I_C=300\text{mA}, I_B=30\text{mA}$		0.50	V
$V_{BE(SAT)}$	$I_C=30\text{mA}, I_B=3.0\text{mA}$	0.75	0.95	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		1.20	V
$V_{BE(SAT)}$	$I_C=300\text{mA}, I_B=30\text{mA}$		1.70	V
$h_{FE}$	$V_{CE}=0.4\text{V}, I_C=30\text{mA}$	30	120	
$h_{FE}$	$V_{CE}=0.5\text{V}, I_C=100\text{mA}$	25		
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=300\text{mA}$	15		

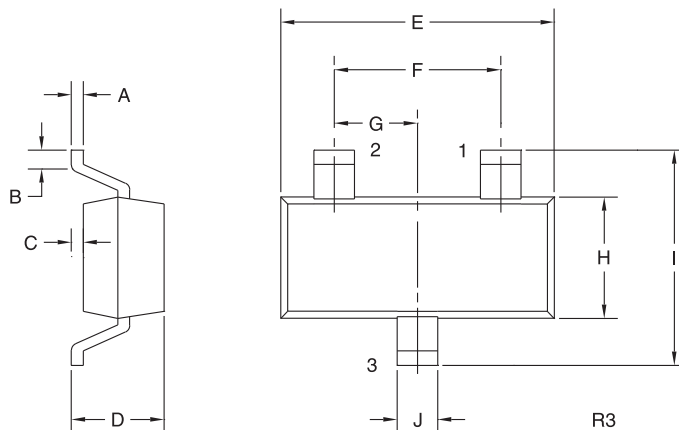
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$f_T$	$V_{CE}=10\text{V}$ , $I_C=30\text{mA}$ , $f=100\text{MHz}$	350		MHz
$C_{ob}$	$V_{CB}=5.0\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$		5.0	pF
$C_{ib}$	$V_{BE}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$		8.0	pF
$t_{on}$	$V_{CC}=10\text{V}$ , $I_C=300\text{mA}$ , $I_{B1}=30\text{mA}$		18	ns
$t_{off}$	$V_{CC}=10\text{V}$ , $I_C=300\text{mA}$ , $I_{B1}=I_{B2}=30\text{mA}$		28	ns
$t_s$	$V_{CC}=10\text{V}$ , $I_C=I_{B1}=I_{B2}=10\text{mA}$		18	ns

**SOT-23 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

- 1) Base
- 2) Emitter
- 3) Collector

**MARKING CODE: C2R**

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075		1.90	
G	0.037		0.95	
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

SOT-23 (REV: R3)

R3 (1-February 2010)