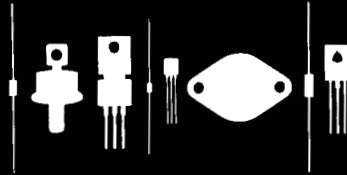


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145 Adams Avenue  
Hauppauge, New York 11788



2N5859

NPN SILICON SWITCHING TRANSISTOR

JEDEC TO-39 CASE

**DESCRIPTION**

The CENTRAL SEMICONDUCTOR 2N5859 is an NPN silicon core driver transistor manufactured by the epitaxial planar process designed for high current and high speed switching applications.

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

	SYMBOL		UNIT
Collector-Base Voltage	$V_{CB0}$	80	V
Collector-Emitter Voltage	$V_{CE0}$	40	V
Emitter-Base Voltage	$V_{EB0}$	6.0	V
Collector Current	$I_C$	2.0	A
Power Dissipation	$P_D$	1.0	W
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	5.0	W
Operating and Storage			
Junction Temperature	$T_J, T_{STG}$	-65 to +200	$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$	175	$^\circ\text{C/W}$
Thermal Resistance	$\theta_{JC}$	35	$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
$I_{CEV}$	$V_{CE}=50\text{V}, V_{BE}(\text{OFF})=2.0\text{V}$		0.20	$\mu\text{A}$
$I_{CEV}$	$V_{CE}=50\text{V}, V_{BE}(\text{OFF})=2.0\text{V}, T_A=75^\circ\text{C}$		5.0	$\mu\text{A}$
$I_{CBO}$	$V_{CB}=50\text{V}$		0.25	$\mu\text{A}$
$I_{CBO}$	$V_{CB}=50\text{V}, T_A=75^\circ\text{C}$		5.0	$\mu\text{A}$
$I_{EBO}$	$V_{BE}=5.0\text{V}$		0.10	$\mu\text{A}$
$BV_{CBO}$	$I_C=100\mu\text{A}$	80		V
$BV_{CEO}$	$I_C=10\text{mA}$	40		V
$BV_{EBO}$	$I_E=10\mu\text{A}$	6.0		V
$V_{CE}(\text{SAT})$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.40	V
$V_{CE}(\text{SAT})$	$I_C=1.0\text{A}, I_B=100\text{mA}$		0.70	V
$V_{BE}(\text{SAT})$	$I_C=500\text{mA}, I_B=50\text{mA}$	0.8	1.0	V
$V_{BE}(\text{SAT})$	$I_C=1.0\text{A}, I_B=100\text{mA}$	0.9	1.25	V
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=500\text{mA}$	30	120	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{A}$	15	100	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{A}, T_A=-55^\circ\text{C}$	10	-	
$f_T$	$V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$	250	-	MHz
$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$	-	7.0	pF
$C_{ib}$	$V_{EB}=0.5\text{V}, I_C=0, f=100\text{kHz}$	-	60	pF
$t_{ON}$	$V_{CC}=30\text{V}, V_{BE}(\text{OFF})=2.0\text{V}, I_C=1.0\text{A}, I_{B1}=100\text{mA}$		35	ns
$t_r$	$V_{CC}=30\text{V}, V_{BE}(\text{OFF})=2.0\text{V}, I_C=1.0\text{A}, I_{B1}=100\text{mA}$		30	ns
$t_d$	$V_{CC}=30\text{V}, V_{BE}(\text{OFF})=2.0\text{V}, I_C=1.0\text{A}, I_{B1}=100\text{mA}$		6.0	ns
$t_{OFF}$	$V_{CC}=30\text{V}, I_C=1.0\text{A}, I_{B1}=I_{B2}=100\text{mA}$		60	ns
$t_s$	$V_{CC}=30\text{V}, I_C=1.0\text{A}, I_{B1}=I_{B2}=100\text{mA}$		35	ns
$t_f$	$V_{CC}=30\text{V}, I_C=1.0\text{A}, I_{B1}=I_{B2}=100\text{mA}$		35	ns

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