

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$,unless otherwise specified)

PARAMETERS	SYMBOL	RATINGS	UNITS
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector-Emitter Voltage	V_{CEV}	70	V
Collector Current	I_C	15	A
Collector Peak Current (Note)	I_{CM}	15	A
Base Current	I_B	7	A
Base Peak Current (Note)	I_{BM}	15	A
Total Dissipation at $T_A=25^\circ\text{C}$	P_D	90	W
Max. Operating Junction Temperature	T_J	+200	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ 200	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	$I_C=200\text{mA}, I_B=0\text{V}$	60			V
Collector-Emitter Sustaining Voltage	$V_{CER(SUS)}$	$I_C=0.2\text{A}, R_{BE}=100\Omega$	70			V
Collector Cut-off Current	I_{CEO}	$V_{CE}=30\text{V}, I_B=0$			0.7	mA
Collector Cut-off Current	I_{CEX}	$V_{CE}=100\text{V}, V_{BE(OFF)}=1.5\text{V}$ $V_{CE}=100\text{V}, V_{BE(OFF)}=1.5\text{V},$ $T_a=150^\circ\text{C}$			1.0 5.0	mA
Emitter Cut-off Current	I_{EBO}	$V_{BE}=7\text{V}, I_C=0$			5.0	mA
ON CHARACTERISTICS						
DC Current Gain (Note)	h_{FE}	$I_C=4\text{A}, V_{CE}=4\text{V},$ $I_C=10\text{A}, V_{CE}=4\text{V}$	20 5		70	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=4\text{A}, I_B=400\text{mA}$ $I_C=10\text{A}, I_B=3.3\text{A}$			1.1 3.0	V
Base-Emitter On Voltage	$V_{BE(ON)}$	$I_C=4\text{A}, V_{CE}=4\text{V}$			1.5	V
SECOND BREAKDOWN						
Second Breakdown Collector with Base Forward Biased	Is/b	$V_{CE}=60\text{V}, T=1.0\text{s}, \text{Non-repetitive}$	2.87			A
DYNAMIC CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	$I_C=0.5\text{A}, V_{CE}=10\text{V}, f=1\text{MHz}$	2.5			MHz
Small-Signal Current Gain	h_{FE}	$I_C=1\text{A}, V_{CE}=4\text{V}, f=1\text{kHz}$	15		120	
Small-Signal Current Gain Cut-off Frequency	f_{hFE}	$I_C=1\text{A}, V_{CE}=4\text{V}, f=1\text{kHz}$	10			kHz

Note: Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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