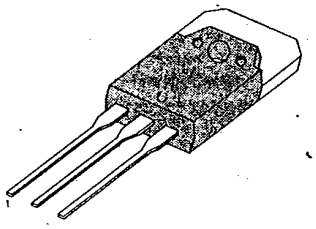
KSC5024 NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-3P



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	800	V
Collector-Emitter Voltage	V_{CEO}	500	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	10	A
Collector Current (Pulse)	I_C	20	A
Base Current	I_B	3	A
Collector Dissipation	P_C	90	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	800			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	500			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	V_{CEX}(sus)	I_C=3.5A, I_{B1}=−I_{B2}=1.4A L=500μH, Clamped	500			V
Collector Cutoff Current	I_{CBO}	V_{CB}=500V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.8A	15		50	
	$h_{FE}2$	V_{CE}=5V, I_C=4A	8			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=4A, I_B=0.8A			1	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=4A, I_B=0.8A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		120		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.8A		18		MHz
Trun On Time	t_{on}	V_{CC}=200V			0.5	μS
Storage Time	t_S	$5I_{B1}$=−$2.5I_{B2}$=I_C=5A			3	μS
Fall Time	t_f	RL=40Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	R	O	Y
h_{FE} 1	15-30	20-40	30-50

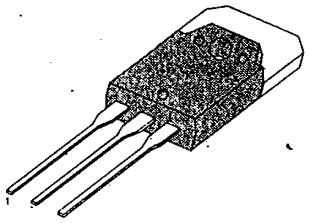
KSC5025 NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-3P



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	800	V
Collector-Emitter Voltage	V_{CEO}	500	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	15	A
Collector Current (Pulse)	I_C	25	A
Base Current	I_B	4	A
Collector Dissipation	P_C	100	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	800			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	500			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	V_{CEX}(sus)	I_C=5A, I_{B1}=−I_{B2}=2A L=500μH, Clamped	500			V
Collector Cutoff Current	I_{CBO}	V_{CB}=500V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	h_{FE}1	V_{CE}=5V, I_C=1.2A	15		50	
	h_{FE}2	V_{CE}=5V, I_C=6A	8			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=6A, I_B=1.2A			1	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=6A, I_B=1.2A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		160		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=1.2A		18		MHz
Trun On Time	t_{on}	V_{CC}=200V			0.5	μS
Storage Time	t_S	5I_{B1}=−2.5I_{B2}=I_C=7A			3	μS
Fall Time	t_f	RL=28.6Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	R	O	Y
h_{FE} 1	15-30	20-40	30-50

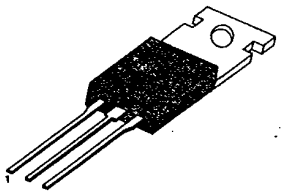
KSC5026 NPN SILICON TRANSISTOR

T-33-11

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-220



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	1.5	A
Collector Current (Pulse)	I_C	5	A
Base Current	I_B	0.8	A
Collector Dissipation	P_C	40	W
Junction Temperature	TJ	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	$V_{CEX(sus)}$	I_C=0.75A				
		I_{B1}=−I_{B2}=0.15A	800			V
		L=5mH, Clamped				
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.1A	10		40	
	$h_{FE}2$	V_{CE}=5V, I_C=0.5A	8			
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=0.75A, I_B=0.15A			2	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=0.75A, I_B=0.15A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		35		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.1A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_S	$5I_{B1}$=−$2.5I_{B2}$=I_C=1A			3	μS
Fall Time	t_f	RL=400Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40

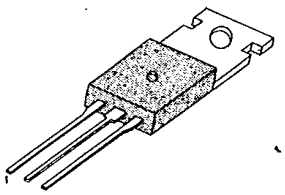
KSC5027 NPN SILICON TRANSISTOR

T-33-11

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-220



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	3	A
Collector Current (Pulse)	I_C	10	A
Base Current	I_B	1.5	A
Collector Dissipation	P_C	50	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	$V_{CEX(SUS)}$	I_C=1.5A, I_{B1}=−I_{B2}=0.3A L=2mH, Clamped	800			V
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.2A	10		40	
	$h_{FE}2$	V_{CE}=5V, I_C=1A	8			
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.5A, I_B=0.3A			2	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.5A, I_B=0.3A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		60		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.2A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_s	$5I_{B1}$=−$2.5I_{B2}$=I_C=2A			3	μS
Fall Time	t_f	RL=200Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40

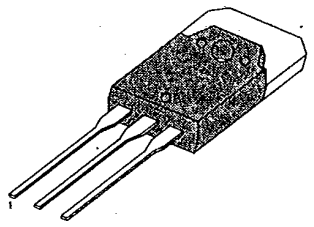
KSC5028 NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-3P



1. Base 2. Collector 3. Emitter

3

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	3	A
Collector Current (Pulse)	I_C	10	A
Base Current	I_B	1.5	A
Collector Dissipation	P_C	80	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	V_{CEX}(sus)	I_C=1.5A, I_{B1}=−I_{B2}=0.3A L=2mH, Clamped	800			V
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	h_{FE}1	V_{CE}=5V, I_C=0.2A	10		40	
	h_{FE}2	V_{CE}=5V, I_C=1A	8			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=1.5A, I_B=0.3A			2	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=1.5A, I_B=0.3A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		60		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.2A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_S	5I_{B1}=−2.5I_{B2}=I_C=2A			3	μS
Fall Time	t_f	RL=200Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40

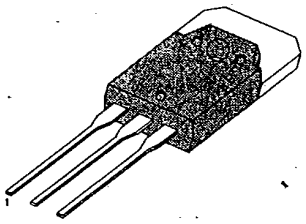
KSC5029 NPN SILICON TRANSISTOR

T-33-13

HIGH VOLTAGE AND HIGH RELIABILITY

HIGH SPEED SWITCHING
WIDE SOA

TO-3P



1. Base 2. Collector 3. Emitter

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1100	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	4.5	A
Collector Current (Pulse)	I_C	15	A
Base Current	I_B	2	A
Collector Dissipation	P_C	90	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	I_C=1mA, I_E=0	1100			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C=5mA, R_{BE}=∞	800			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=1mA, I_C=0	7			V
Collector Emitter Sustaining Voltage	V_{CEX}(sus)	I_C=2A, I_{B1}=−I_{B2}=0.4A L=2mH, Clamped	800			V
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.3A	10		40	
	$h_{FE}2$	V_{CE}=5V, I_C=1.5A	8			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=2A, I_B=0.4A			2	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=2A, I_B=0.4A			1.5	V
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		90		pF
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=0.3A		15		MHz
Trun On Time	t_{on}	V_{CC}=400V			0.5	μS
Storage Time	t_s	$5I_{B1}$=−$2.5I_{B2}$=I_C=3A			3	μS
Fall Time	t_f	RL=133Ω			0.3	μS

h_{FE} (1) CLASSIFICATION

Classification	N	R	O
h_{FE} 1	10-20	15-30	20-40