ALPHANUMERIC INDEX — CROSS-REFERENCE (Continued)

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Industry Part Number	Motorola Direct Replacement	Motorola Similar Replacement	Page Number
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BUW74	BUX47		3-499
BUW75	BUX47		3-499
BUW76	BUX47		3-499
BUW77	BUX47		3-499
BUW81	MJ10014		3-600
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BUW85	MJE13003		3-938
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BUX14CECCF	BUX14		—
BUX14CECCL	BUX14		—
BUX15	BUX47A		3-499
BUX15CECCF	BUX47A		3-499
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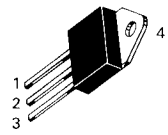
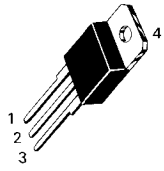
*Consult Motorola if a direct replacement is necessary.

TABLE 4 — PLASTIC TO-218



STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR



STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

CASE 340-02 (TO-218AC)

I_CCont Amps Max	$V_{CEO(sus)}$ Volts Min	Device Type NPN	Device Type PNP	h_{FE} Min/Max	@ I_C Amp	Resistive Switching t_s μs Max	Resistive Switching t_f μs Max	Resistive Switching @ I_C Amp	f_T MHz Min	P_D (Case) Watts @ 25°C
3	750	MJH16032		4 min	3	2	1.5	2		125
	850	MJH16034		4 min	3	2	1.5	2		125
5	400	BUW11		6 min	3	4	0.8	3		125
	450	BUW11A MJH16002 MJH16004		6 min 5 min 7 min	2.5 5 5	4 3 2.7	0.8 0.3 0.35	2.5 3 3		125 100 100
	500	MJH16002A		5 min	5	3	0.3	3		100
	1500*	MJH12004		2.5 min	4.5	—	1	4.5	4	100
6	375	BU426†		30 typ	0.6	2 typ	0.5 typ	2.5	6 typ	113
	400	BU426A†		30 typ	0.6	2 typ	0.5 typ	2.5	6 typ	113
8	400	BUW12 MJH16106		6 min 6/25	6 8	4 2 typ	0.8 0.1 typ	5 5		125 125
	450	BUW12A MJH16006 MJH16008		6 min 5 min 7 min	5 8 8	4 2.5 2.2	0.8 0.25 0.25	5 5 5		125 125 125
	500	BUT50P##† MJH16006A		30 min 5 min	2 8	0.75 typ 2.5	0.1 typ 0.25	5 5		100 125
	700	BU508,A BU508D,AD		2.25 min 2.25 min	4.5 4.5	8 typ 8 typ	0.5 typ 0.5 typ	4.5 4.5	7 7	125 125
	750	MJH12005					0.4 typ	5	4	100
9	400	BUV47†		7 min	5	2	0.4	6		128
	450	BUV47A†		7 min	6	2	0.4	6		128
10	40	TIP33	TIP34	20 min	3				3	80
	60	BDV65##† TIP33A TIP140##	BDV64##† TIP34A TIP145##	1k min 20 min 500 min	5 3 10	 2.5 typ	 2.5 typ	 5	 3 4#	125 80 125
	80	BDV65A##† TIP33B TIP141##	BDV64A##† TIP34B TIP146##	1k min 20 min 500 min	5 3 10	 2.5 typ	 2.5 typ	 5	 3 4#	125 80 125
	100	BDV65B##† TIP33C TIP142##	BDV64B##† TIP34C TIP147##	1k min 20 min 500 min	5 3 10	 2.5 typ	 2.5 typ	 5	 3 4#	125 80 125
	120	BDV65C##†	BDV64C##†	1k min	5					125
	200	BU323P##†		150 min	6	15	15	6		125
	250	BU323AP##†		150 min	6	15	15	6		125
	400	MJH10012##		100/2k	6	15	15	6		118
	800	MJH16018		4 min	5	4.5 typ	0.2 typ	5		150
15	60	TIP3055	TIP2955	5 min	10				2.5	80
	150	MJH11018##	MJH11017##	400/15k	10				3#	150
	200	MJH11020##	MJH11019##	400/15k	10				3#	150
	250	MJH11022##	MJH11021##	400/15k	10				3#	150

$|h_{fe}|$ @ 1 MHz, ## Darlington
* $V_{(BR)CEX}$ or $V_{(BR)CES}$
† These devices supplied in Case 340D-01. Consult Motorola for details.

(continued)

TABLE 14 — SWITCHMODE POWER TRANSISTORS (continued)

$V_{CEO(sus)}$ Volts Min	I_CCont Amps Max	V_{CEV} Volts Min	Device Type NPN unless otherwise noted	h_{FE} Min/Max	@ I_C Amp	Resistive Switching t_s μs Max	Resistive Switching t_f μs Max	Resistive Switching @ I_C Amp	f_T MHz Min	P_D (Case) Watts @ 25°C	Case JEDEC/MOT
450	15	1000	BUV48A	8 min	8	2	0.4	10		150	TO-218/340D
	9	1000	BUS47A	7 min	5	2	0.4	5		150	TO-204/1
		1000	BUS47AP	7 min	6	2	0.4	6		128	TO-218/340D
	8	850	2N6835★	7.5/3	5	2.5	0.25	5	10		TO-204/1
		850	MJE16080	5 min	8	2	0.5	5		80	TO-220/221A
		850	MJ12021★	5 min	8		0.1 typ	8			TO-204/1
		850	MJ16006★	5 min	8	2.5	0.25	5			TO-204/1
		850	MJ16008★	7 min	8	2.2	0.25	5			TO-204/1
		850	MJH16006★	5 min	8	2.5	0.25	5			TO-218/340
		850	MJH16008★	7 min	8	2.2	0.25	5			TO-218/340
		1000	BUW12A	6 min	5	4	0.8	5		125	TO-218/340
	5	850	2N6834★	10/30	3	2.7	0.35	3			TO-204/1
		850	MJ12020★	5 min	5		0.13 typ	3			TO-204/1
		850	MJ16002★	5 min	5	3	0.3	3	15		TO-204/1
		850	MJ16004★	8 min	3	2.7	0.35	3			TO-204/1
		850	MJE16002★	5 min	5	3	0.3	3			TO-220/221A
		850	MJE16004★	7 min	5	2.7	0.35	3			TO-220/221A
		850	MJH16002★	5 min	5	3	0.3	3			TO-218/340
		850	MJH16004★	7 min	5	2.7	0.35	3			TO-218/340
		1000	BUW11A	6 min	2.5	4	0.8	2.5		125	TO-218/340
	3	1000	BUX85	30 min	0.1	3.5	1.4	1	4	50	TO-220/221A
400	56	600	BUT33##	20 min	36	3.3	1.6	36		250	TO-204/197
	50	650	MJ10015##★	10 min	40	2.5	1	20			TO-204/197
	40	600	MJ10023##★	50/600	10	2.5	0.9	20			TO-204/197
	30	850	BUS98	8 min	20	2.3	0.4	20		250	TO-204/197
	28	600	BUT13##	20 min	20	2.6	0.8	18		175	TO-204/1
	20	500	MJ10001#★	40/400	10	3	1.8	10	10**		TO-204/1
		500	MJ10005#★	40/400	10	1.5	0.5	10	10**		TO-204/1
		500	MJ13333★	10/60	5	4	0.7	10			TO-204/1
	15	650	MJ13090★	8 min	10	2.5	0.5	10			TO-204/1
		650	MJ16110	6/20	15	0.8 typ	0.1 typ	10		175	TO-204/1
		650	MJH16110	6/20	15	0.8 typ	0.1 typ	10		135	TO-218/340
		850	2N6547★	6/30	10	4	0.7	10	6 to 24		TO-204/1
		850	BUX48	8 min	10	2	0.4	10		175	TO-204/1
		850	BUV48	8 min	10	2	0.4	10		150	TO-218/340D
	12	700	MJE13009★	6/30	8	3	0.7	8	4**		TO-220/221A
	10	950	MJ12010	4.2 min	5		1	5	6 typ		TO-204/1
		550	MJ10012#	100/2k	6	6	15	15	6		TO-204/1
		500	MJ10003#★	30/300	5	2.5	1	5	10**		TO-204/1
		500	MJ10007##★	30/300	5	1.1	0.25	5	10**		TO-204/1
		450	MJ13015★	8/20	5	2	0.5	5			TO-204/1
	9	850	BUS47	7 min	6	2	0.4	6		150	TO-204/1
		850	BUS47P	7 min	5	2	0.4	6		128	TO-218/340D

★ Designers Data Sheet characterization
Darlington ## Darlington with speed-up diode * t_{off} ** $|h_{fe}|$ @ 1 MHz

(continued)

BUW11,A
BUW12,A

Designer's Data Sheet

NPN Silicon Power Transistors

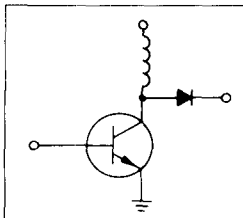
Switchmode Series

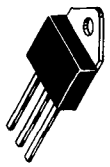
POWER TRANSISTORS
5 and 8 AMPERES
400 and 450 VOLTS
125 WATTS

These transistors are designed for high-voltage, high-speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line-operated switchmode applications.

Typical Applications:
- Switching Regulators
- Inverters
- Solenoids
- Relay Drivers
- Motor Controls
- Deflection Circuits

Features:
- Collector-Emitter Voltage — V_{CEV} = 850 and 1000
- Fast Turn-Off Times
  - 140 ns Inductive Fall Time – 100°C (Typ)
  - 170 & 250 ns Inductive Crossover Time – 100°C (Typ)
  - 1200 & 1800 ns Inductive Storage Time – 100°C (Typ)
- 100°C Performance Specified for:
  - Reverse-Biased SOA with Inductive Load
  - Switching Times with Inductive Loads
  - Saturation Voltages
  - Leakage Currents
- Extremely High RBSOA Capability





CASE 340-02
TO-218AC

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector-Emitter Voltage	BUW11/12 BUW11A/12A	$V_{CEO(sus)}$	400 450	Vdc
Collector-Emitter Voltage	BUW11/12 BUW11A/12A	V_{CEV}	850 1000	Vdc
Emitter-Base Voltage		V_{EB}	10	Vdc
Collector Current — Continuous	BUW11/11A BUW12/12A	I_C	5 8	Adc
— Peak (1)	BUW11/11A BUW12/12A	I_{CM}	10 20	
Base Current — Continuous	BUW11/11A BUW12/12A	I_B	2 4	Adc
— Peak (1)	BUW11/11A BUW12/12A	I_{BM}	4 8	
Total Power Dissipation @ T_C = 25°C @ T_C = 100°C Derate above T_C = 25°C		P_D	125 50 1	Watts W/°C
Operating and Storage Junction Temperature Range		T_J, T_{stg}	–55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	°C/W
Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	°C

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle ≤ 10%.

3

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic			Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS(1)							
Collector-Emitter Sustaining Voltage (Table 1) (I_C = 100 mA, I_B = 0)	BUW11/12 BUW11A/12A		$V_{CEO(sus)}$	400 450	— —	— —	Vdc
Collector Cutoff Current (V_{CEV} = Rated V_{CEV}, $V_{BE(off)}$ = 1.5 Vdc) (V_{CEV} = Rated V_{CEV}, $V_{BE(off)}$ = 1.5 Vdc, T_C = 100°C)			I_{CEV}	— —	— —	0.1 1	mAdc
Collector Cutoff Current (V_{CE} = Rated V_{CEV}, R_{BE} = 50 Ω, T_C = 100°C)			I_{CER}	—	—	1	mAdc
Emitter Cutoff Current (V_{EB} = 9 Vdc, I_C = 0)			I_{EBO}	—	—	0.1	mAdc
SECOND BREAKDOWN							
Second Breakdown Collector Current with Base Forward Biased			$I_{S/b}$	See Figures 8 and 9			
Clamped Inductive SOA with Base Reverse Biased			RBSOA	See Figures 10 and 11			
BUW11 **ON CHARACTERISTICS**(1)							
Collector-Emitter Saturation Voltage (I_C = 1 Adc, I_B = 0.2 Adc) (I_C = 3 Adc, I_B = 0.6 Adc) (I_C = 3 Adc, I_B = 0.6 Adc, T_C = 100°C)			$V_{CE(sat)}$	— — —	— — —	1 1.5 2	Vdc
Base-Emitter Saturation Voltage (I_C = 3 Adc, I_B = 0.6 Adc) (I_C = 3 Adc, I_B = 0.6 Adc, T_C = 100°C)			$V_{BE(sat)}$	— —	— —	1.4 1.4	Vdc
DC Current Gain (I_C = 3 Adc, V_{CE} = 5 Vdc)			h_{FE}	6	—	—	—
DYNAMIC CHARACTERISTICS							
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 kHz)			C_{ob}	—	125	—	pF
SWITCHING CHARACTERISTICS							
Inductive Load (Table 1)							
Storage Time	(I_C = 3 Adc, I_{B1} = 0.6 Adc, $V_{BE(off)}$ = 5 Vdc, $V_{CE(pk)}$ = 300 Vdc)	(T_J = 100°C)	t_{sv}	—	1.2	1.5	μs
Fall Time			t_{fi}	—	0.14	0.3	
Crossover Time			t_c	—	0.25	0.5	
Resistive Load (Table 2)							
Delay Time	(I_C = 3 Adc, V_{CC} = 250 Vdc, I_{B1} = 0.6 Adc, PW = 20 μs, Duty Cycle ≤ 2%)	(I_{B2} = 0.6 Adc, R_{B2} = 4 Ω)	t_d	—	—	0.1	μs
Rise Time			t_r	—	—	0.8	
Storage Time			t_s	—	—	4	
Fall Time			t_f	—	—	0.8	

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

3

ELECTRICAL CHARACTERISTICS (Continued) (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
BUW11A					
ON CHARACTERISTICS(1)					
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$				Vdc
(I_C = 1 Adc, I_B = 0.2 Adc)		—	—	1	
(I_C = 2.5 Adc, I_B = 0.5 Adc)		—	—	1.5	
(I_C = 2.5 Adc, I_B = 0.5 Adc, T_C = 100°C)		—	—	2	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$				Vdc
(I_C = 2.5 Adc, I_B = 0.5 Adc)		—	—	1.4	
(I_C = 2.5 Adc, I_B = 0.5 Adc, T_C = 100°C)		—	—	1.4	
DC Current Gain	h_{FE}				
(I_C = 2.5 Adc, V_{CE} = 5 Vdc)		6	—	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance	C_{ob}				pF
(V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 kHz)		—	125	—	
SWITCHING CHARACTERISTICS					
Inductive Load (Table 1)					
Storage Time	(I_C = 2.5 Adc, I_{B1} = 0.5 Adc, $V_{BE(off)}$ = 5 Vdc, $V_{CE(pk)}$ = 300 Vdc) (T_J = 100°C)	t_{sv}	—	1.2	1.5	μs
Fall Time		t_{fi}	—	0.14	0.3	
Crossover Time		t_c	—	0.25	0.5	
Resistive Load (Table 2)					
Delay Time	(I_C = 2.5 Adc, V_{CC} = 250 Vdc, I_{B1} = 0.5 Adc, PW = 20 μs, Duty Cycle ≤ 2%) (I_{B2} = 0.5 Adc, R_{B2} = 4 Ω)	t_d	—	—	0.1	μs
Rise Time		t_r	—	—	0.8	
Storage Time		t_s	—	—	4	
Fall Time		t_f	—	—	0.8	

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

3

ELECTRICAL CHARACTERISTICS (Continued) (T_C = 25°C unless otherwise noted)

Characteristic			Symbol	Min	Typ	Max	Unit
BUW12							
ON CHARACTERISTICS(1)							
Collector-Emitter Saturation Voltage			$V_{CE(sat)}$				Vdc
(I_C = 3 Adc, I_B = 0.6 Adc)				—	—	1	
(I_C = 6 Adc, I_B = 1.2 Adc)				—	—	1.5	
(I_C = 6 Adc, I_B = 1.2 Adc, T_C = 100°C)				—	—	2	
Base-Emitter Saturation Voltage			$V_{BE(sat)}$				Vdc
(I_C = 6 Adc, I_B = 1.2 Adc)				—	—	1.5	
(I_C = 6 Adc, I_B = 1.2 Adc, T_C = 100°C)				—	—	1.5	
DC Current Gain			h_{FE}	6	—	—	—
(I_C = 6 Adc, V_{CE} = 5 Vdc)							
DYNAMIC CHARACTERISTICS							
Output Capacitance			C_{ob}	—	125	—	pF
(V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 kHz)							
SWITCHING CHARACTERISTICS							
Inductive Load (Table 1)							
Storage Time	(I_C = 6 Adc, I_{B1} = 1.2 Adc, $V_{BE(off)}$ = 5 Vdc, $V_{CE(pk)}$ = 300 Vdc)	(T_J = 100°C)	t_{sv}	—	1.8	2.3	μs
Fall Time			t_{fi}	—	0.14	0.3	
Crossover Time			t_c	—	0.17	0.5	
Resistive Load (Table 2)							
Delay Time	(I_C = 6 Adc, V_{CC} = 250 Vdc, I_{B1} = 1.2 Adc, PW = 20 μs, Duty Cycle ≤ 2%)	(I_{B2} = 1.2 Adc, R_{B2} = 4 Ω)	t_d	—	—	0.1	μs
Rise Time			t_r	—	—	0.8	
Storage Time			t_s	—	—	4	
Fall Time			t_f	—	—	0.8	

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

Characteristic			Symbol	Min	Typ	Max	Unit
BUW12A							
ON CHARACTERISTICS(1)							
Collector-Emitter Saturation Voltage			$V_{CE(sat)}$				Vdc
(I_C = 3 Adc, I_B = 0.6 Adc)				—	—	1	
(I_C = 5 Adc, I_B = 1 Adc)				—	—	1.5	
(I_C = 5 Adc, I_B = 1 Adc, T_C = 100°C)				—	—	2	
Base-Emitter Saturation Voltage			$V_{BE(sat)}$				Vdc
(I_C = 5 Adc, I_B = 1 Adc)				—	—	1.5	
(I_C = 5 Adc, I_B = 1 Adc, T_C = 100°C)				—	—	1.5	
DC Current Gain			h_{FE}	6	—	—	—
(I_C = 5 Adc, V_{CE} = 5 Vdc)							
DYNAMIC CHARACTERISTICS							
Output Capacitance			C_{ob}	—	125	—	pF
(V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 kHz)							
SWITCHING CHARACTERISTICS							
Inductive Load (Table 1)							
Storage Time	(I_C = 5 Adc, I_{B1} = 1 Adc, $V_{BE(off)}$ = 5 Vdc, $V_{CE(pk)}$ = 300 Vdc)	(T_J = 100°C)	t_{sv}	—	1.8	2.3	μs
Fall Time			t_{fi}	—	0.14	0.3	
Crossover Time			t_c	—	0.17	0.5	
Resistive Load (Table 2)							
Delay Time	(I_C = 5 Adc, V_{CC} = 250 Vdc, I_{B1} = 1 Adc, PW = 20 μs, Duty Cycle ≤ 2%)	(I_{B2} = 1 Adc, R_{B2} = 4 Ω)	t_d	—	—	0.1	μs
Rise Time			t_r	—	—	0.8	
Storage Time			t_s	—	—	4	
Fall Time			t_f	—	—	0.8	

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

3

TYPICAL STATIC CHARACTERISTICS

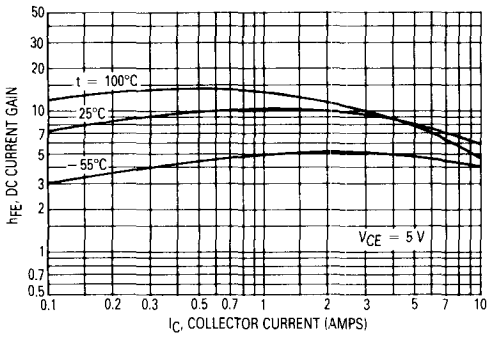


Figure 1. Typical DC Current Gain

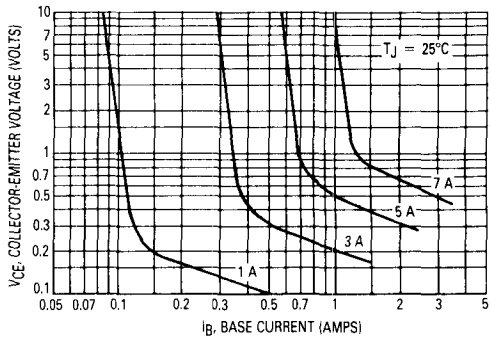


Figure 2. Typical Collector Saturation Region

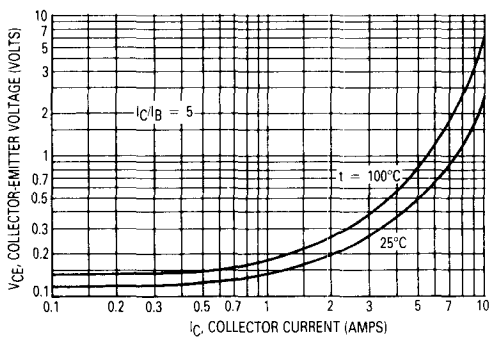


Figure 3. Typical Collector Saturation Region

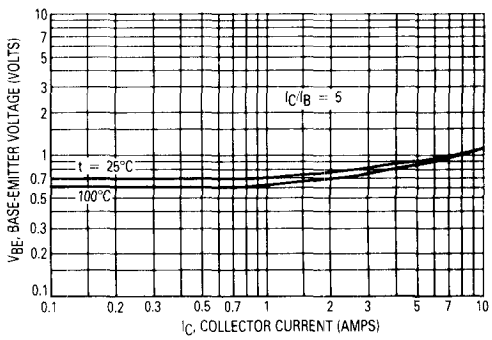


Figure 4. Typical Base-Emitter Voltage

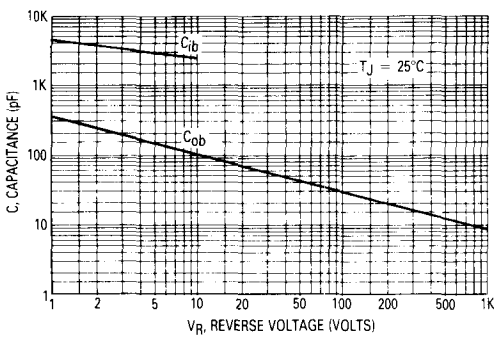


Figure 5. Typical Capacitance

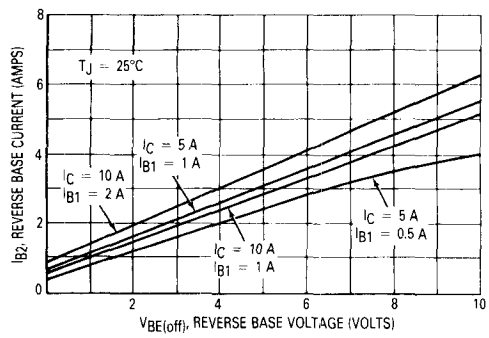


Figure 6. Peak Reverse Base Current

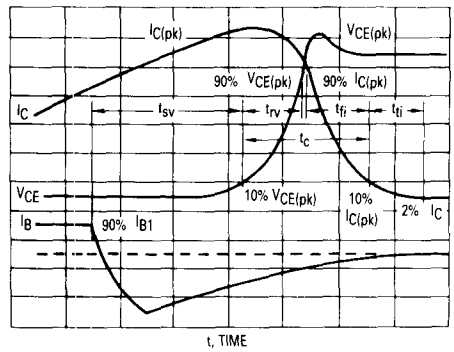
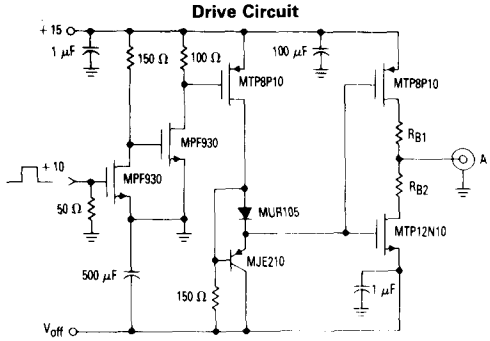


Figure 7. Inductive Switching Measurements

Table 1. Inductive Load Switching

Drive Circuit



*Tektronix AM503
P6302 or Equivalent

Scope — Tektronix
7403 or Equivalent

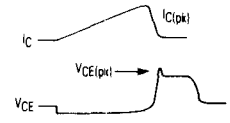
Note: Adjust V_{off} to obtain desired $V_{BE(off)}$ at Point A.

$T_1 \approx \frac{L_{coil}\ I_{C(pk)}}{V_{CC}}$

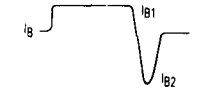
T_1 adjusted to obtain $I_{C(pk)}$

$V_{(BR)CEO(sus)}$
L = 10 mH
R_{B2} = ∞
V_{CC} = 20 Volts
$I_{C(pk)}$ = 100 mA
L_B = 0

Inductive Switching
L = 200 μH
R_{B2} = 0
V_{CC} = 20 Volts
R_{B1} selected for desired I_{B1}
L_B = 1 μH



RBSOA
L = 200 μH
R_{B2} = 0
V_{CC} = 20 Volts
R_{B1} selected for desired I_{B1}
L_B = 0



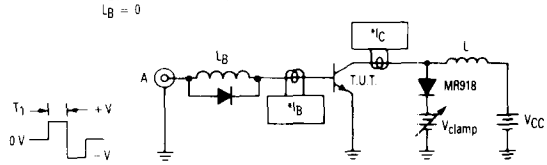
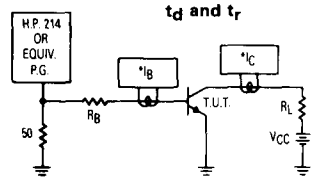
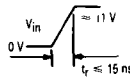


Table 2. Resistive Load Switching

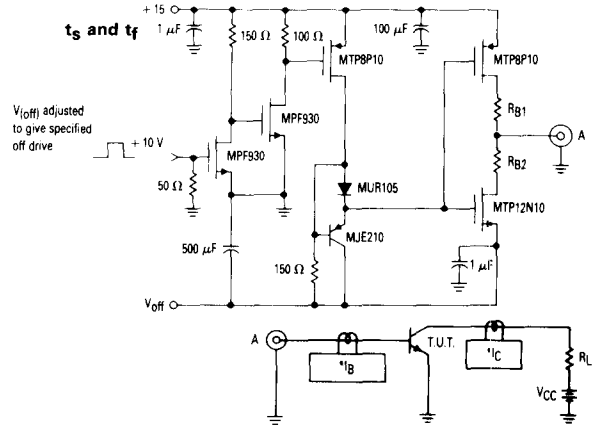
t_d and t_r





*Tektronix AM503
P6302 or Equivalent

t_s and t_f



MAXIMUM FORWARD BIAS SAFE OPERATING AREA

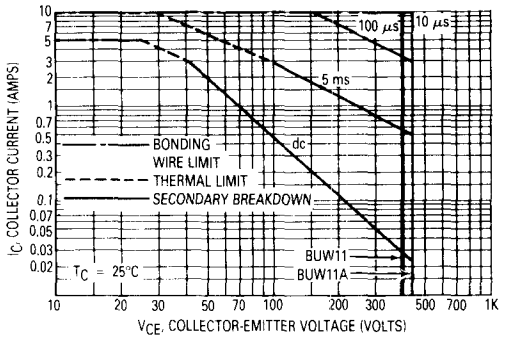


Figure 8. BUW11,A

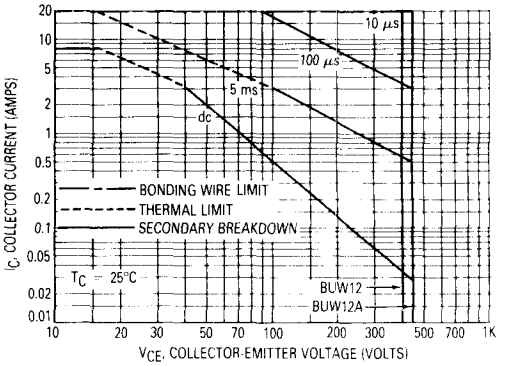


Figure 9. BUW12,A

MAXIMUM REVERSE BIAS SAFE OPERATING AREA

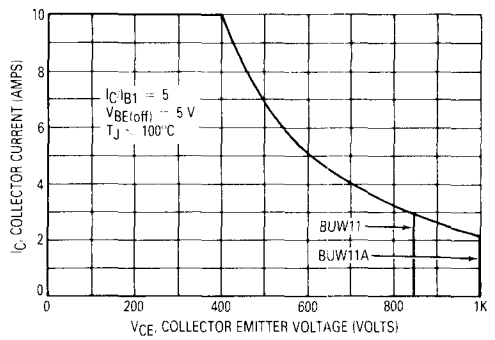


Figure 10. BUW11,A

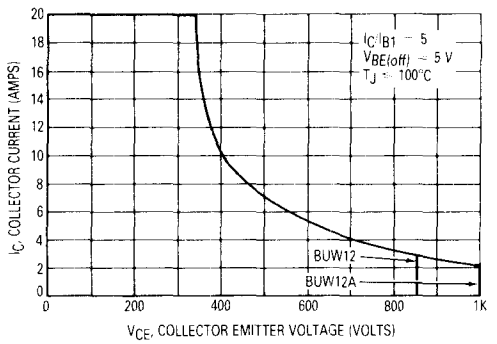


Figure 11. BUW12,A

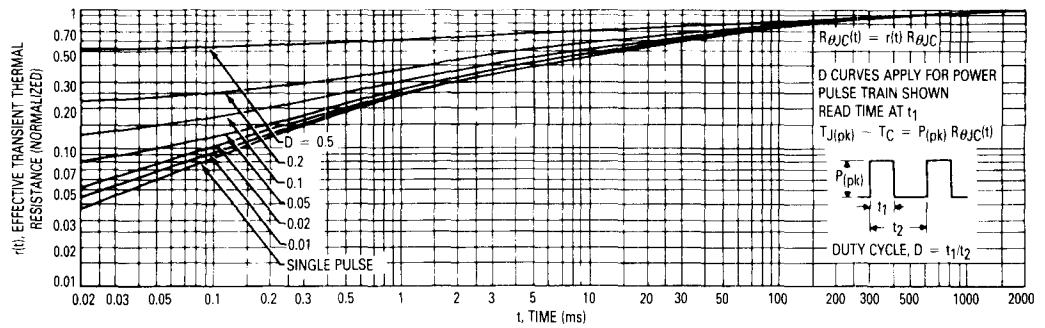


Figure 12. Thermal Response

SAFE OPERATING AREA INFORMATION

FORWARD BIAS

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate I_C—V_{CE} limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figures 8 and 9 is based on T_C = 25°C; $T_{J(pk)}$ is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% but must be derated when $T_C \geq 25°C$. Second breakdown limitations do not derate the same as thermal limitations. Allowable current at the voltages shown on Figures 8 and 9 may be found at any case temperature by using the appropriate curve on Figure 13.

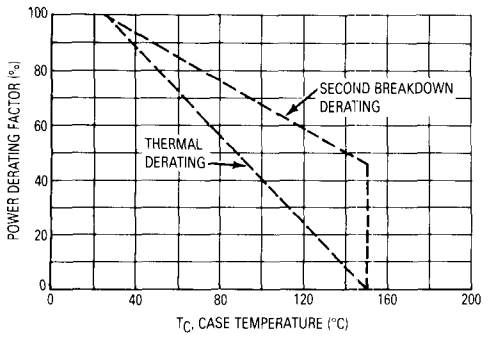


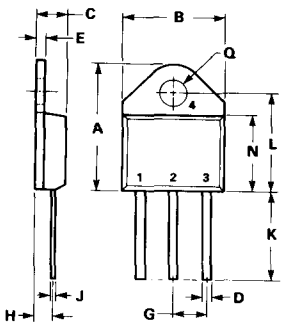
Figure 13. Power Derating

$T_{J(pk)}$ may be calculated from the data in Figure 12. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

REVERSE BIAS

For inductive loads, high voltage and high current must be sustained simultaneously during turn-off, in most cases, with the base-to-emitter junction reverse biased. Under these conditions the collector voltage must be held to a safe level at or below a specific value of collector current. This can be accomplished by several means such as active clamping, RC snubbing, load line shaping, etc. The safe level for these devices is specified as Reverse Biased Safe Operating Area and represents the voltage-current condition allowable during reverse biased turn-off. This rating is verified under clamped conditions so that the device is never subjected to an avalanche mode. Figures 10 and 11 gives the RBSOA characteristics.

OUTLINE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

CASE 340-02
TO-218AC

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	20.32	21.08	0.800	0.830
B	15.49	15.90	0.610	0.626
C	4.19	5.08	0.165	0.200
D	1.02	1.65	0.040	0.065
E	1.35	1.65	0.053	0.065
G	5.21	5.72	0.205	0.225
H	2.65	2.94	0.104	0.116
J	0.38	0.64	0.015	0.025
K	12.70	15.49	0.500	0.610
L	15.88	16.51	0.625	0.650
N	12.19	12.70	0.480	0.500
Q	4.04	4.22	0.159	0.166