MJ16018

NPN POWER TRANSISTORS

TO-3 CASE STYLE

The American Microsemiconductor MJ16018 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.

MAXIMUM RATINGS

Rating	Symbol	MJ16018	MJW16018	Unit
Collector–Emitter Voltage	$V_{CEO(sus)}$	800		Vdc
Collector–Emitter Voltage	V_{CEV}	1500		Vdc
Emitter–Base Voltage	V_{EB}	6		Vdc
Collector Current — Continuous — Peak(1)	I_C I_{CM}	10 15		Adc
Base Current — Continuous — Peak(1)	I_B I_{BM}	8 12		Adc
Total Power Dissipation @ T_C = 25°C @ T_C = 100°C Derate above T_C = 25°C	P_D	 175 100 1	 125 50 1	 Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to 200	−55 to 150	°C

Storage Time	Baker Clamped (I_C = 5 Adc, I_{B1} = 2 Adc, $V_{BE(off)}$ = 2 Vdc, $V_{CE(pk)}$ = 400 Vdc) PW = 25 µs	(T_J = 25°C)	t_{sv}	—	4000	8000	ns
Fall Time			t_{fi}	—	60	200	
Crossover Time			t_c	—	90	300	
Storage Time		(T_J = 100°C)	t_{sv}	—	4500	9000	
Fall Time			t_{fi}	—	80	250	
Crossover Time			t_c	—	110	375	
Resistive Load (Table 1)							
Delay Time	Baker Clamped (I_C = 5 Adc, V_{CC} = 250 Vdc, I_{B1} = 2 Adc, I_{B2} = 2 Adc, R_{B2} = 3 Ω, PW = 25 µs, Duty Cycle ≤ 2%)		t_d	—	85	200	ns
Rise Time			t_r	—	900	2000	
Storage Time			t_s	—	4500	9000	
Fall Time			t_f	—	200	400	

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

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Aerospace Mgmt. Sys. Cert.
AS/EN/JISQ9100:2009 Rev. C
ISO9001:2008
Cert No. 45325

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 = 50 mA, I_B = 0)	$V_{CEO(sus)}$	800	—	—	Vdc
Collector Cutoff Current (V_{CEV} = 1500 Vdc, $V_{BE(off)}$ = 1.5 Vdc) (V_{CEV} = 1500 Vdc, $V_{BE(off)}$ = 1.5 Vdc, T_C = 100°C)	I_{CEV}	 — —	 — —	 0.25 1.5	mAdc
Collector Cutoff Current (V_{CE} = 1500 Vdc, R_{BE} = 50 Ω, T_C = 100°C)	I_{CER}	—	—	2.5	mAdc
Emitter Cutoff Current (V_{EB} = 6 Vdc, I_C = 0)	I_{EBO}	—	—	0.1	mAdc
Collector–Emitter Saturation Voltage (I_C = 5 Adc, I_B = 2 Adc) (I_C = 10 Adc, I_B = 5 Adc) (I_C = 5 Adc, I_B = 2 Adc, T_C = 100°C)	$V_{CE(sat)}$	 — — —	 — — —	 1 5 1.5	Vdc
Base–Emitter Saturation Voltage (I_C = 5 Adc, I_B = 2 Adc) (I_C = 5 Adc, I_B = 2 Adc, T_C = 100°C)	$V_{BE(sat)}$	— —	— —	1.5 1.5	Vdc
DC Current Gain (I_C = 5 Adc, V_{CE} = 5 Vdc)	h_{FE}	4	—	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 kHz)	C_{ob}	—	—	450	pF

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max		Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	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 μs, Duty Cycle ≤ 10%.

Delay Time	Baker Clamped (I_C = 5 Adc, V_{CC} = 250 Vdc, I_{B1} = 2 Adc, I_{B2} = 2 Adc, R_{B2} = 3 Ω, PW = 25 μs, Duty Cycle ≤ 2%)	t_d	—	85	200	ns
Rise Time		t_r	—	900	2000	
Storage Time		t_s	—	4500	9000	
Fall Time		t_f	—	200	400	

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

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