

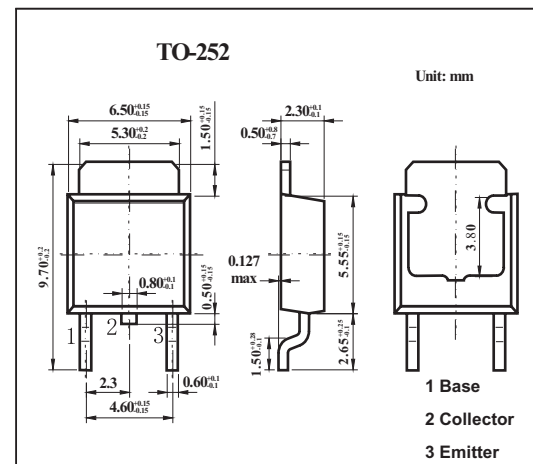
## Complementary Power Transistors

MJD31,MJD31C(NPN)

MJD32,MJD32C(PNP)

## ■ Features

- Lead Formed for Surface Mount Applications in Plastic Sleeves
- Pb-Free Packages are Available

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit	
Collector-emitter voltage	MJD31,MJD32 MJD31C,MJD32C	$V_{CEO}$	40	V
			100	V
Collector-base voltage	MJD31,MJD32 MJD31C,MJD32C	$V_{CB}$	40	V
			100	V
Emitter-base voltage		$V_{EB}$	5	V
Collector current		$I_C$	3	A
Collector current (pulse)		$I_{CP}$	5	A
Base current		$I_B$	1	A
Total Device Dissipation FR-5 Board @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15	W	
		0.12	W/ $^\circ\text{C}$	
Total Device Dissipation Alumina Substrate @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.56	W	
		0.012	W/ $^\circ\text{C}$	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	8.3	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$	
Lead Temperature for Soldering Purposes	TL	260	$^\circ\text{C}$	

## MJD31,MJD31C(NPN) MJD32,MJD32C(PNP)

### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector-emitter sustaining voltage MJD31,MJD32 MJD31C,MJD32C	V <sub>CEo(sus)</sub>	I <sub>c</sub> = 30 mA, I <sub>B</sub> = 0	40			V
			100			V
Collector cutoff current MJD31,MJD32 MJD31C,MJD32C	I <sub>CEO</sub>	V <sub>CE</sub> = 40 V, I <sub>B</sub> = 0			50	μA
		V <sub>CE</sub> = 60 V, I <sub>B</sub> = 0			50	μA
Collector cutoff current	I <sub>CES</sub>	V <sub>CE</sub> = Rated V <sub>CEo</sub> , V <sub>EB</sub> = 0			20	μA
Emitter cutoff current	I <sub>EBO</sub>	V <sub>BE</sub> = 5V, I <sub>C</sub> = 0			1	mA
DC current gain *	h <sub>FE</sub>	I <sub>C</sub> = 1 A, V <sub>CE</sub> = 4 V	25			
		I <sub>C</sub> = 3 A, V <sub>CE</sub> = 4 V	10		50	
Collector-emitter saturation voltage *	V <sub>CE(sat)</sub>	I <sub>C</sub> = 3 A, I <sub>B</sub> = 375 mA			1.2	V
Base-emitter saturation voltage *	V <sub>BE(on)</sub>	I <sub>C</sub> = 3 A, V <sub>CE</sub> = 4 V			1.8	V
Current-gain-bandwidth product *2	f <sub>r</sub>	I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 10 V, f <sub>test</sub> = 1 MHz	3			MHz
Small-signal current gain	h <sub>fe</sub>	I <sub>C</sub> = 0.5 A, V <sub>CE</sub> = 10 V, f = 1 kHz	20			

\*1 Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2.0%.

\*2 f<sub>r</sub> = | h<sub>fe</sub> | f<sub>test</sub>

### ■ hFE Classification

TYPE	MJD31	MJD31C	MJD32	MJD32C
Marking	J31	J31C	J32	J32C