

Silicon NPN Power Transistors

2N5038 2N5039

DESCRIPTION

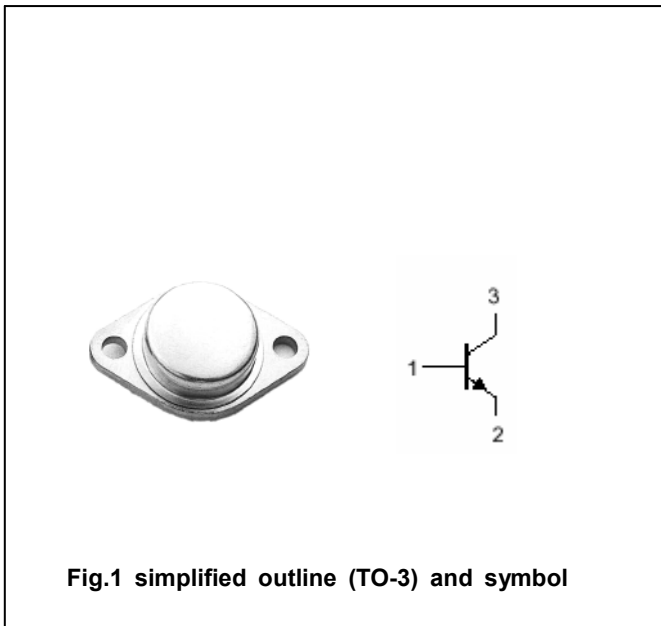
- With TO-3 package
- High speed
- Low collector saturation voltage

APPLICATIONS

- They are especially intended for high current and fast switching applications

PINNING

PIN	DESCRIPTION
1	Base
2	Emitter
3	Collector



Absolute maximum ratings(Ta=□)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT	
V _{CBO}	Collector-base voltage	Open emitter	2N5038	150	V
			2N5039	120	
V _{CEO}	Collector-emitter voltage	Open base	2N5038	90	V
			2N5039	75	
V _{EBO}	Emitter-base voltage	Open collector	7	V	
I _C	Collector current		20	A	
I _{CM}	Collector current-peak		30	A	
I _B	Base current		5	A	
P _D	Total Power Dissipation	T _C =25□	140	W	
T _j	Junction temperature		200	□	
T _{stg}	Storage temperature		-65~200	□	

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R _{th j-c}	Thermal resistance junction to case	1.25	□/W

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CHARACTERISTICS

T_j=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V _{CEO(SUS)}	Collector-emitter sustaining voltage	2N5038	I _C =0.2A ; I _B =0			V
		2N5039				
V _{CEsat-1}	Collector-emitter saturation voltage	2N5038	I _C =12A ; I _B =1.2A		1.0	V
		2N5039	I _C =10A ; I _B =1A			
V _{CEsat-2}	Collector-emitter saturation voltage	I _C =20A ; I _B =5A			2.5	V
V _{BEsat}	Base-emitter saturation voltage	I _C =20A ; I _B =5A			3.3	V
V _{BE}	Base-emitter on voltage	2N5038	I _C =12A ; V _{CE} =5V		1.8	V
		2N5039	I _C =10A ; V _{CE} =5V			
I _{CEO}	Collector cut-off current	2N5038	V _{CE} =70V ; I _B =0		20	mA
		2N5039	V _{CE} =55V ; I _B =0			
I _{CEx}	Collector cut-off current	2N5038	V _{CE} =140V ; V _{BE} =-1.5V V _{CE} =100V ; V _{BE} =-1.5V ; T _C =150°C		5.0 10	mA
		2N5039	V _{CE} =110V ; V _{BE} =-1.5V V _{CE} =85V ; V _{BE} =-1.5V T _C =150°C			
I _{EBO}	Emitter cut-off current	2N5038	V _{EB} =5V ; I _C =0		5	mA
		2N5039				
h _{FE-1}	DC current gain	I _C =2A ; V _{CE} =5V	50		250	
h _{FE-2}	DC current gain	2N5038	I _C =12A ; V _{CE} =5V	20	100	
		2N5039	I _C =10A ; V _{CE} =5V			
I _{s/b}	Second breakdown collector current	V _{CE} =28V, V _{CE} =45V(t=1.0s Nonrepetitive)	5 0.9			A

Switching times

t _r	Rise time	For 2N5038 I _C =12A ; I _{B1} =- I _{B2} =1.2A ; V _{CC} =30V For 2N5039 I _C =10A ; I _{B1} =- I _{B2} =1A ; V _{CC} =30V			0.5	μs
t _s	Storage time				1.5	μs
t _f	Fall time				0.5	μs

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PACKAGE OUTLINE

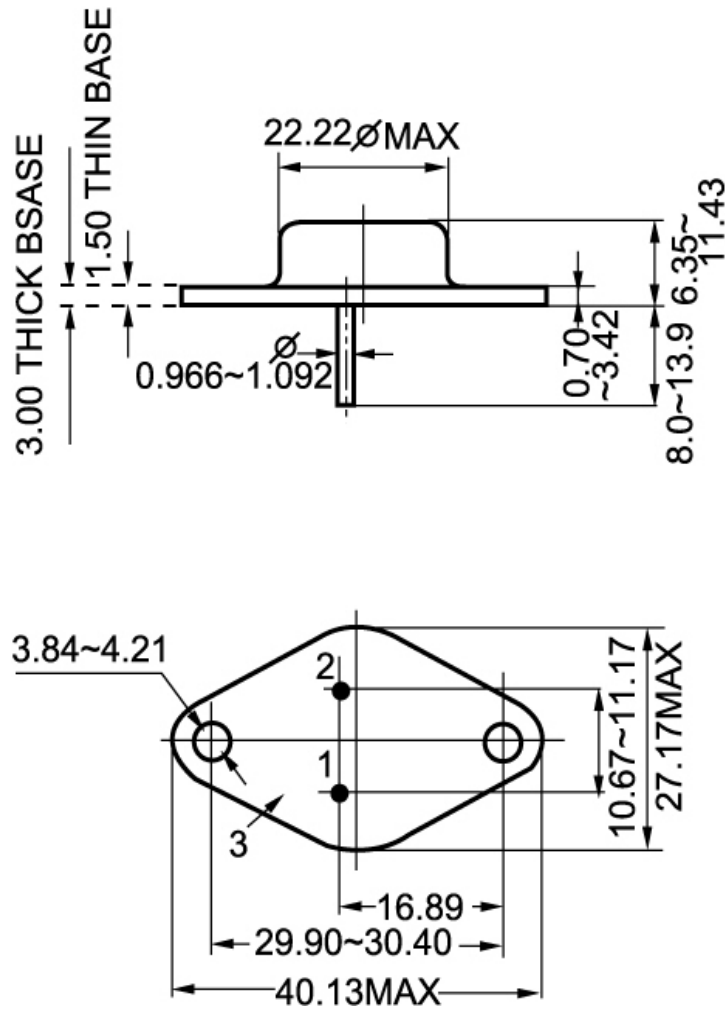


Fig.2 outline dimensions (unindicated tolerance:±0.10mm)