Silicon NPN Power Transistors 2N5038/2N5039

DESCRIPTION

・With TO-3 package
・High current

APPLICATIONS

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

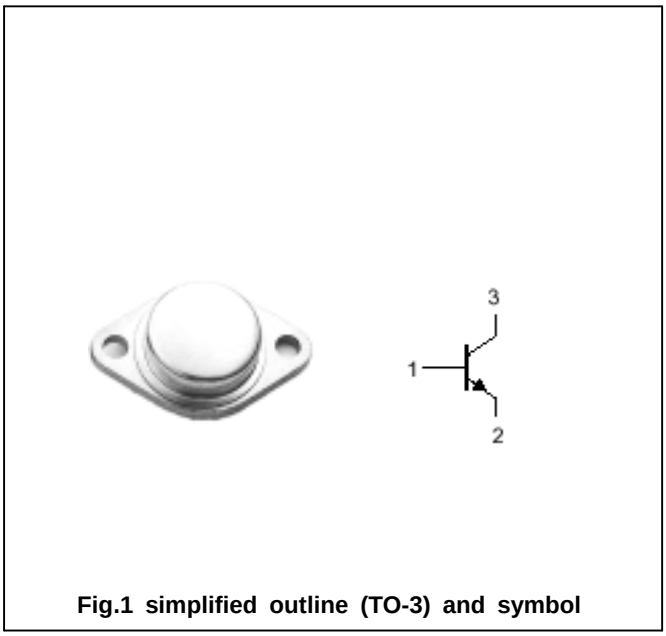

Fig.1 simplified outline (TO-3) and symbol

PINNING

PIN	DESCRIPTION
1	Base
2	Emitter
3	Collector

Absolute maximum ratings(Ta=℃)

SYMBOL	PARAMETER		CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	2N5038	Open emitter	150	V
		2N5039		120	
V_{CEO}	Collector-emitter voltage	2N5038	Open base	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
$R_{th\ j\text{-}c}$	Thermal resistance junction to case	1.25	℃/W

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CHARACTERISTICS

Tj=25℃ 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	90			V
		2N5039		75			
$V_{CEsat-1}$	Collector-emitter saturation voltage	2N5038	I_C=12A ;I_B=1.2A			1	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}	Collector-emitter saturation voltage		I_C=20A ;I_B=5A			3.3	V
V_{BE}	Base-emitter 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_{CEV}	Collector cut-off current	2N5038	V_{CE}=140V; V_{BE}=-1.5V V_{CE}=100V ;T_C=150℃			50 10	mA
		2N5039	V_{CE}=110V; V_{BE}=-1.5V V_{CE}=85V ;T_C=150℃			50 10	
I_{EBO}	Emitter cut-off current	2N5038	V_{EB}=5V; I_C=0			5	mA
		2N5039				15	
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 ;Vcc=30V For 2N5039 I_C=10A ;I_{B1}=- I_{B2}=1A ;Vcc=30V			0.5	μs
t_s	Storage time					1.5	μs
t_f	Fall time					0.5	μs

PACKAGE OUTLINE

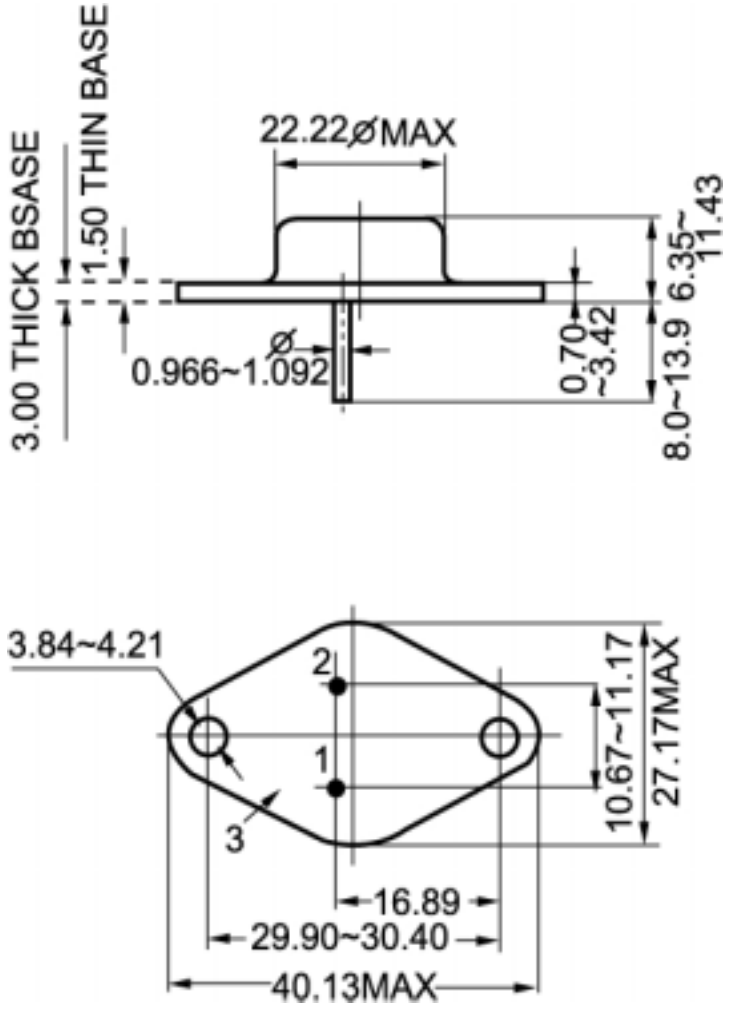

Fig.2 outline dimensions (unindicated tolerance:±0.10mm)