Power Transistor (31±4V, 2A)

2SD2167

●**Features**

1) Built-in zener diode between collector and base.
2) Zener diode has low voltage dispersion.
3) Strong protection against reverse power surges due to low loads.
4) P_C=2 W (on 40×40×0.7mm ceramic board)

●**Packaging specifications and h_{FE}**

Type	2SD2167
Package	MPT3
h_{FE}	NPQ
Marking	DL*
Code	T100
Basic ordering unit (pieces)	1000

* Denotes h_{FE}

●**Electrical characteristics (Ta=25℃)**

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	31±4	V
Collector-emitter voltage	V_{CEO}	31±4	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	2	A (DC)
		3	A (Pulse) *1
Collector power dissipation	P_C	0.5	W
		2	W *2
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55~+150	℃

*1 Pw=20ms, duty=1/2
*2 When mounted on a 40×40×0.7 mm ceramic board.

●**Absolute maximum ratings (Ta=25℃)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	27	—	35	V	I_C=50 μA
Collector-emitter breakdown voltage	BV_{CEO}	27	—	35	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	—	—	V	I_E=50 μA
Collector cutoff current	I_{CBO}	—	—	1	μA	V_{CB}=20V
Emitter cutoff current	I_{EBO}	—	—	1	μA	V_{EB}=5V
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1	V	I_C/I_B=2A/0.2A *
		—	0.25	0.5	V	I_C/I_B=1A/50mA *
DC current transfer ratio	h_{FE}	56	—	270	—	V_{CE}/I_C=3V/0.5A
Transition frequency	f_T	—	100	—	MHz	V_{CE}=3V, I_E=−0.5A, f=30MHz *
Output capacitance	Cob	—	25	—	pF	V_{CB}=10V, I_E=0A, f=1MHz

* Measured using pulse current.

(92S-358–D310)

Power Transistor (60V, 3A)

2SD2394 / 2SD2576

●**Features**

1) Low saturation voltage, typically $V_{CE(sat)}$ =0.3V at I_C / I_B=2A / 0.2A.
2) Excellent DC current gain characteristics.
3) Wide SOA (safe operating area).

●**Packaging specifications and h_{FE}**

Type	2SD2394	2SD2576
Package	TO-220FN	TO-220FN
h_{FE}	EF	F
Code	—	—
Basic ordering unit (pieces)	500	500

●**Electrical characteristics (Ta=25℃)**

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	80	V
Collector-emitter voltage	V_{CEO}	60	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	3	A (DC)
	I_{CP}	6	A (Pulse) *
Collector power dissipation	P_C	2	W
		25	W (Tc=25℃)
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55~+150	℃

* Single pulse, Pw=100ms

●**Absolute maximum ratings (Ta=25℃)**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	80	—	—	V	I_C=50 μA
Collector-emitter breakdown voltage		BV_{CEO}	60	—	—	V	I_C=1mA
Emitter-base breakdown voltage		BV_{EBO}	7	—	—	V	I_E=50 μA
Collector cutoff current		I_{CBO}	—	—	10	μA	V_{CB}=60V
Emitter cutoff current		I_{EBO}	—	—	10	μA	V_{EB}=7V
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	—	1	V	I_C/I_B=2A/0.2A
		$V_{CE(sat)}$	—	—	0.8	V	
Base-emitter saturation voltage		$V_{BE(sat)}$	—	—	1.5	V	I_C/I_B=2A/0.2A *
DC current transfer ratio	2SD2394	h_{FE}	100	—	320	—	V_{CE}/I_C=5V/0.5A
	2SD2576		160	—	320	—	
Transition frequency		f_T	—	8	—	MHz	V_{CE}=5V, I_E=−0.5A, f=5MHz *
Output capacitance		Cob	—	35	—	pF	V_{CB}=10V, I_E=0A, f=1MHz

*1 Measured using pulse current.

(94L-1098-D348)

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