



PDTC143T series

FEATURES

- Built-in bias resistors
- Simplified circuit design
- Reduction of component count
- Reduced pick and place costs.

APPLICATIONS

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit applications.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–	50	V
I_o	output current (DC)	–	100	mA
R1	bias resistor	4.7	–	kΩ
R2	open	–	–	–

DESCRIPTION

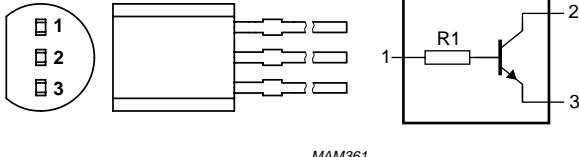
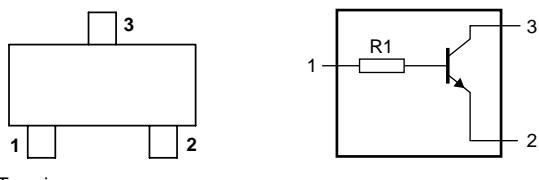
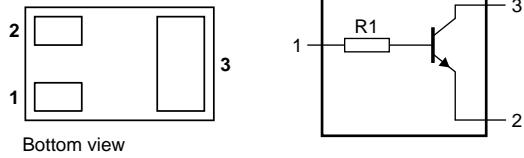
NPN resistor-equipped transistor (see “Simplified outline, symbol and pinning” for package details).

PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	PNP COMPLEMENT
	PHILIPS	EIAJ		
PDTC143TE	SOT416	SC-75	40	PDTA143TE
PDTC143TEF	SOT490	SC-89	11	PDTA143TEF
PDTC143TK	SOT346	SC-59	52	PDTA143TK
PDTC143TM	SOT883	SC-101	DM	PDTA143TM
PDTC143TS	SOT54 (TO-92)	SC-43	TC143T	PDTA143TS
PDTC143TT	SOT23	–	*33 ⁽¹⁾	PDTA143TT
PDTC143TU	SOT323	SC-70	*52 ⁽¹⁾	PDTA143TU

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SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
PDTC143TS	 <small>MAM361</small>	1 2 3	base collector emitter
PDTC143TE PDTC143TEF PDTC143TK PDTC143TT PDTC143TU	 <small>Top view</small> <small>MDB270</small>	1 2 3	base emitter collector
PDTC143TM	 <small>Bottom view</small> <small>MHC507</small>	1 2 3	base emitter collector



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ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PDTC143TE	–	plastic surface mounted package; 3 leads	SOT416
PDTC143TEF	–	plastic surface mounted package; 3 leads	SOT490
PDTC143TK	–	plastic surface mounted package; 3 leads	SOT346
PDTC143TM	–	leadless ultra small plastic package; 3 solder lands; body 1.0 × 0.6 × 0.5 mm	SOT883
PDTC143TS	–	plastic single-ended leaded (through hole) package; 3 leads	SOT54
PDTC143TT	–	plastic surface mounted package; 3 leads	SOT23
PDTC143TU	–	plastic surface mounted package; 3 leads	SOT323

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	50	V
V_{CEO}	collector-emitter voltage	open base	–	50	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_o	output current (DC)		–	100	mA
I_{CM}	collector current		–	100	mA
P_{tot}	total power dissipation SOT54 SOT23 SOT346 SOT323 SOT490 SOT883 SOT416	$T_{amb} \leq 25^\circ\text{C}$ note 1 note 1 note 1 note 1 notes 1 and 2 notes 2 and 3 note 1	– – – – – – –	500 250 250 200 250 250 150	mW mW mW mW mW mW mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

- Refer to standard mounting conditions.
- Reflow soldering is the only recommended soldering method.
- Refer to SOT883 standard mounting conditions; FR4 with 60 µm copper strip line.



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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient SOT54 SOT23 SOT346 SOT323 SOT490 SOT883 SOT416	in free air		
		note 1	250	K/W
		note 1	500	K/W
		note 1	500	K/W
		note 1	625	K/W
		notes 1 and 2	500	K/W
		notes 2 and 3	500	K/W
		note 1	833	K/W

Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 µm copper strip line.

CHARACTERISTICS

$T_{amb} = 25^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = 50\text{ V}; I_E = 0\text{ A}$	–	–	100	nA
I_{CEO}	collector-emitter cut-off current	$V_{CE} = 30\text{ V}; I_B = 0\text{ A}$	–	–	1	µA
		$V_{CE} = 30\text{ V}; I_B = 0\text{ A}; T_j = 150^\circ\text{C}$	–	–	50	µA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0\text{ A}$	–	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}; I_C = 1\text{ mA}$	200	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 5\text{ mA}; I_B = 0.25\text{ mA}$	–	–	100	mV
R_1	input resistor		3.3	4.7	6.1	kΩ
C_c	collector capacitance	$I_E = i_e = 0\text{ A}; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	–	2.5	pF