

Parameter	Value
V_{CC}	-50V
$I_{C(MAX.)}$	-100mA
R_1	4.7k Ω
R_2	10k Ω

●Features

- 1) Built-In Biasing Resistors, $R_1 = 4.7k\Omega$, $R_2 = 10k\Omega$
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 4) Complementary NPN Types: DTC143X series

●Application

INVERTER, INTERFACE, DRIVER

●Inner circuit

DTA143XM/ DTA143XEB/ DTA143XUB



(1) IN (BASE)
 (2) GND (+) (EMITTER)
 (3) OUT (COLLECTOR)

●Outline

SOT-723 DTA143XM (VMT3)	SOT-416FL DTA143XEB (EMT3F)
SOT-416 DTA143XE (EMT3)	SOT-323FL DTA143XUB (UMT3F)
SOT-323 DTA143XU3 (UMT3)	SOT-346 DTA143XKA (SMT3)

DTA143XE/ DTA143XU3/ DTA143XKA



(1) GND (+) (EMITTER)
 (2) IN (BASE)
 (3) OUT (COLLECTOR)

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTA143XM	SOT-723	1212	T2L	180	8	8000	33
DTA143XEB	SOT-416FL	1616	TL	180	8	3000	33
DTA143XE	SOT-416	1616	TL	180	8	3000	33
DTA143XUB	SOT-323FL	2021	TL	180	8	3000	33
DTA143XU3	SOT-323	2021	T106	180	8	3000	33
DTA143XKA	SOT-346	2928	T146	180	8	3000	33

● Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Values	Unit
Supply voltage		V_{CC}	-50	V
Input voltage		V_{IN}	-20 to 7	V
Output current		I_O	-100	mA
Collector current		$I_{C(MAX)}^{*1}$	-100	mA
Power dissipation	DTA143XM	P_D^{*2}	150	mW
	DTA143XEB		150	
	DTA143XE		150	
	DTA143XUB		200	
	DTA143XU3		200	
	DTA143XKA		200	
Junction temperature		T_j	150	$^\circ\text{C}$
Range of storage temperature		T_{stg}	-55 to +150	$^\circ\text{C}$

● Electrical characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	$V_{CC} = -5V, I_O = -100\mu\text{A}$	-	-	-0.3	V
	$V_{I(on)}$	$V_O = -0.3V, I_O = -20\text{mA}$	-2.5	-	-	
Output voltage	$V_{O(on)}$	$I_O = -10\text{mA}, I_I = -0.5\text{mA}$	-	-100	-300	mV
Input current	I_I	$V_I = -5V$	-	-	-1.8	mA
Output current	$I_{O(off)}$	$V_{CC} = -50V, V_I = 0V$	-	-	-500	nA
DC current gain	G_I	$V_O = -5V, I_O = -10\text{mA}$	30	-	-	-
Input resistance	R_I	-	3.29	4.7	6.11	k Ω
Resistance ratio	R_2/R_1	-	1.7	2.1	2.6	-
Transition frequency	f_T^{*1}	$V_{CE} = -10V, I_E = 5\text{mA}, f = 100\text{MHz}$	-	250	-	MHz

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference land.

●Electrical characteristic curves ($T_a=25^\circ\text{C}$)

Fig.1 Input voltage vs. output current (ON characteristics)

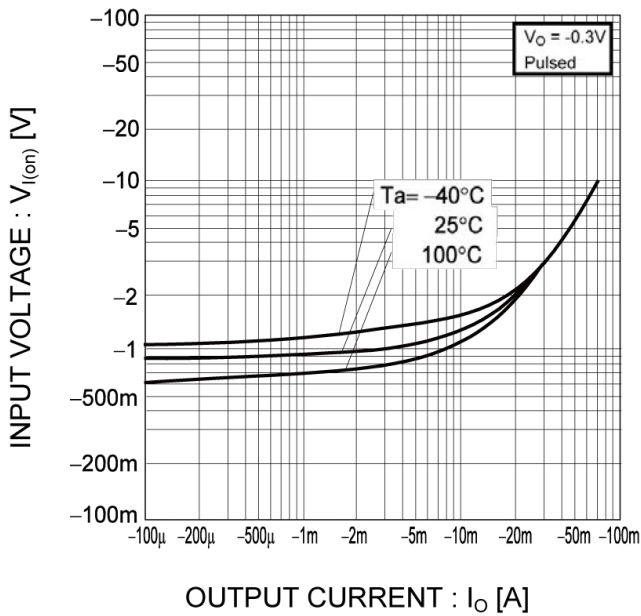


Fig.2 Output current vs. input voltage (OFF characteristics)

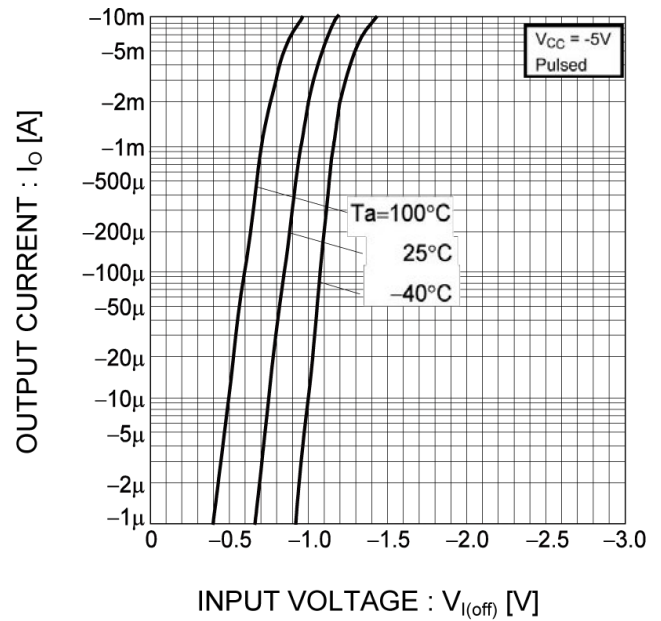


Fig.3 Output current vs. output voltage

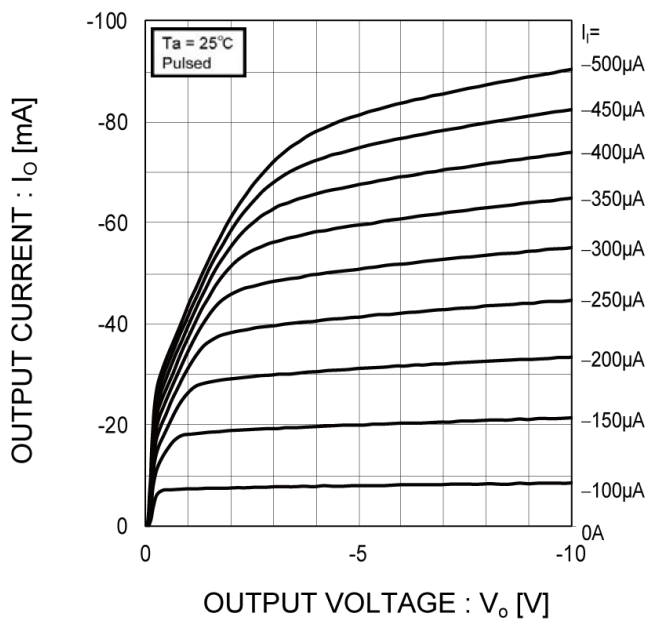
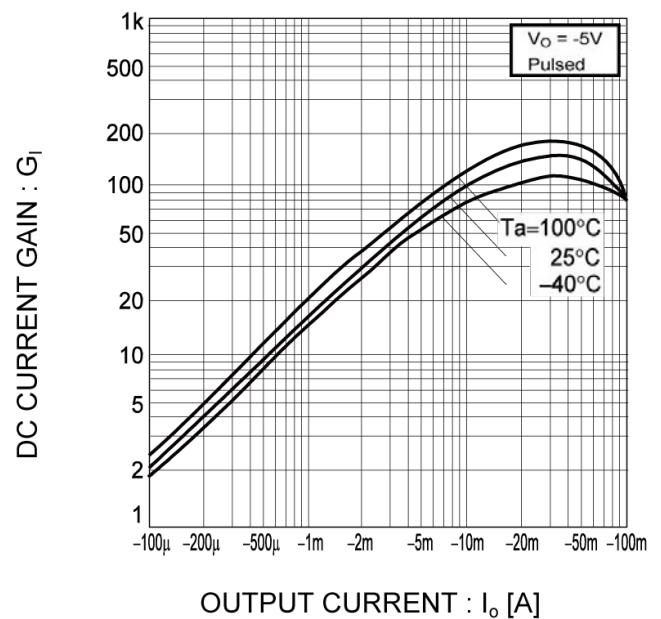
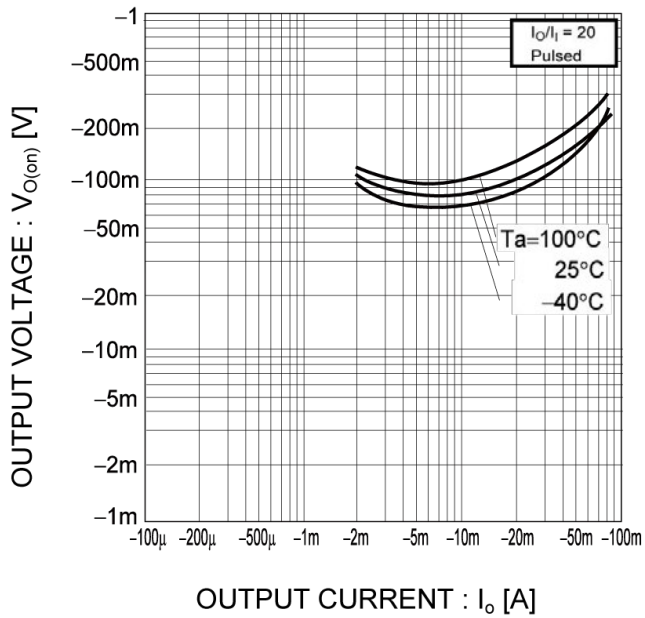


Fig.4 DC current gain vs. output current



● Electrical characteristic curves ($T_a = 25^\circ\text{C}$)

Fig.5 Output voltage vs. output current



●Dimensions

SOT-723
SC-105AA
(VMT3)



Pattern of terminal position areas
[Not a pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
e	0.40		0.02	
HE	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	0.012
Lp	0.20	0.40	0.008	0.016
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.37	-	0.015
b3	-	0.47	-	0.019
e1	0.80		0.031	
I1	-	0.50	-	0.020

Dimension in mm/inches

●Dimensions

SOT-416FL
SC-89
(EMT3F)



Pattern of terminal position areas
[Not a pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.65	0.85	0.026	0.033
A1	0.00	0.10	0.000	0.004
A2	0.60	0.80	0.024	0.031
b	0.21	0.36	0.008	0.014
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	0.76	0.96	0.030	0.038
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.37		0.015	
Lp	0.35	0.55	0.014	0.022
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.46	-	0.018
e1	-	1.05	-	0.041
l1	-	0.65	-	0.026

Dimension in mm/inches

●Dimensions

SOT-416
SC-75A
(EMT3)



Pattern of terminal position areas
[Not a pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.60	0.80	0.024	0.031
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
e	0.50		0.020	
HE	1.40	1.80	0.055	0.071
L1	0.10	-	0.004	-
Lp	0.15	-	0.006	-
Q	0.05	0.25	0.002	0.010
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.40	-	0.016
b3	-	0.50	-	0.020
e1	1.10		0.043	
l1	-	0.70	-	0.028

Dimension in mm/inches

●Dimensions

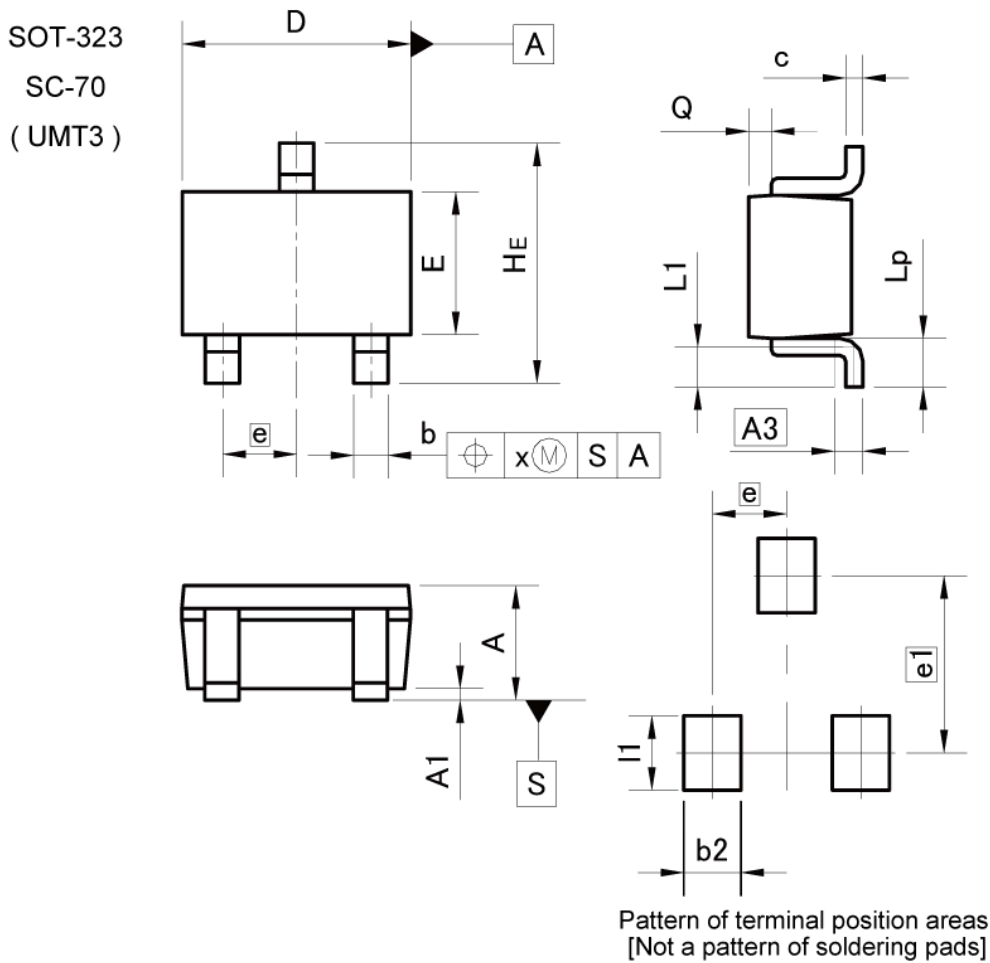


DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.85	1.05	0.033	0.041
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.27	0.42	0.011	0.017
c	0.08	0.18	0.003	0.007
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L	0.43		0.017	
Lp	0.43	0.63	0.017	0.025
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.52	-	0.020
e1	1.47		0.058	
I1	-	0.83	-	0.033

Dimension in mm/inches

●Dimensions



DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0	0.004
A3	0.25		0.01	
b	0.25	0.40	0.01	0.016
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.03	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.02
Lp	0.25	0.55	0.01	0.022
Q	0.10	0.30	0.004	0.012
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
e1	1.55		0.06	
b2	-	0.50	-	0.02
l1	-	0.65	-	0.026

Dimension in mm/inches

●Dimensions

SOT-346
SC-59
(SMT3)



Pattern of terminal position areas
[Not a pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	-	0.10	-	0.004
y	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.60	-	0.024
e1	2.10		0.083	
l1	-	0.90	-	0.035

Dimension in mm/inches

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JAPAN	USA	EU	CHINA
CLASS III	CLASS III	CLASS II b	CLASS III
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 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
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 - Use of the Products in places subject to dew condensation
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- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
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- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

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 - [b] the temperature or humidity exceeds those recommended by ROHM
 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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