

DTG5K

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Package Information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6

DTG5K

NPN Silicon Surface Mount Transistors with Monolithic Bias Resistor Network

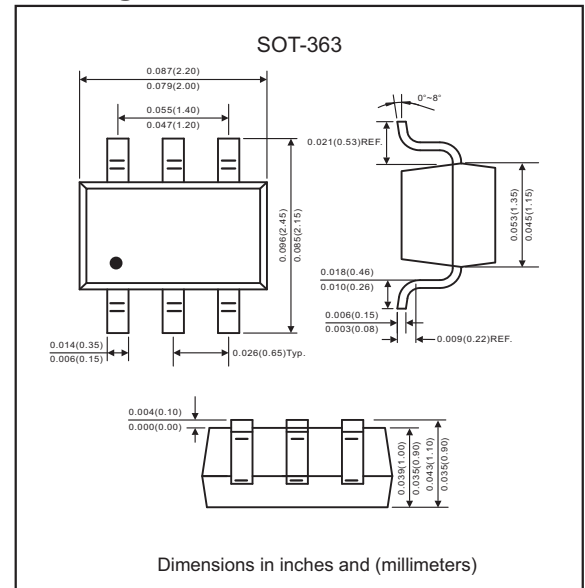
Features

- For Switching and interface circuit and drive circuit applications.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTG5K-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-363
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted, Common for Q_1 and Q_2)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-6~+40	V
Output current	I_C	100	mA
Power dissipation (Note1)	P_D	150	mW
Junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted, Common for Q_1 and Q_2) (Continued)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Input voltage	$V_{CC}=5V, I_{OUT}=100\mu A$	$V_{IN(OFF)}$			0.3	V
	$V_{OUT}=0.3V, I_{OUT}=1mA$	$V_{(BR)CEO}$	1.4			V
Output voltage	$I_{OUT}/I_{IN}=5mA/0.25mA$	$V_{OUT(ON)O}$		0.1	0.3	V
Input current	$V_{IN}=5V$	I_{IN}			880	nA
Out current	$V_{CC}=50V, V_{IN}=0V$	$I_{OUT(OFF)}$			0.5	μA
DC current gain	$V_{OUT}=5V, I_{OUT}=5mA$	h_{FE}	68			
Input resistance		R_1	7	10	13	K Ω
Resistance ratio		R_2/R_1	3.7	4.7	5.7	
Transition Frequency	$V_{CE}=10V, I_E=5mA, f=100MHz$	R_1		250		MHZ

Note : 1. FR-4 @Minimum pad

Rating and characteristic curves (DTG5K)

Fig.1 Input Voltage vs Output Current
(On Characteristics)

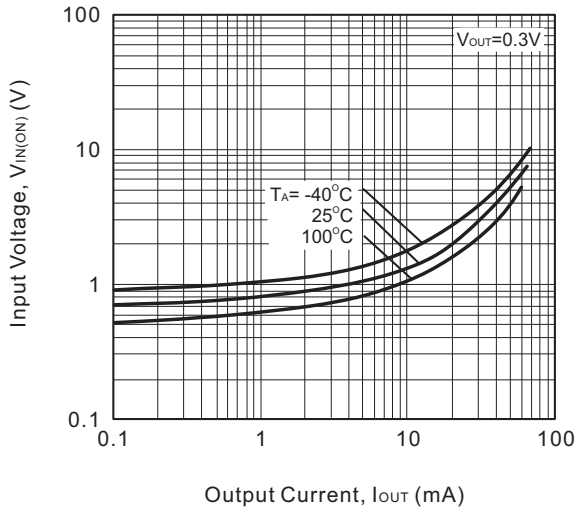


Fig.2 Output Current vs Input Voltage
(On Characteristics)

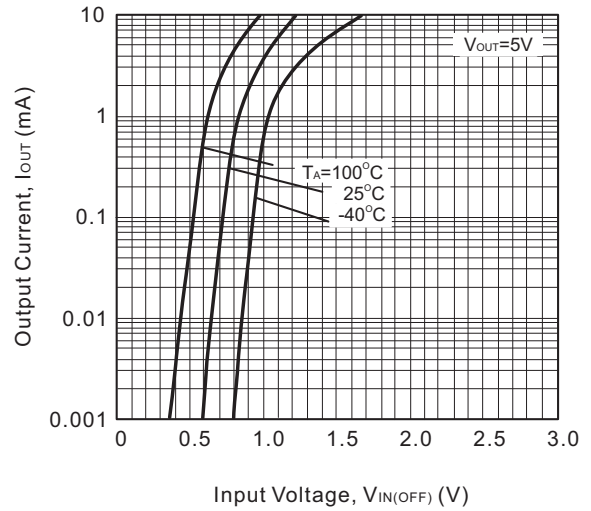


Fig.3 DC Current Gain vs Output Current

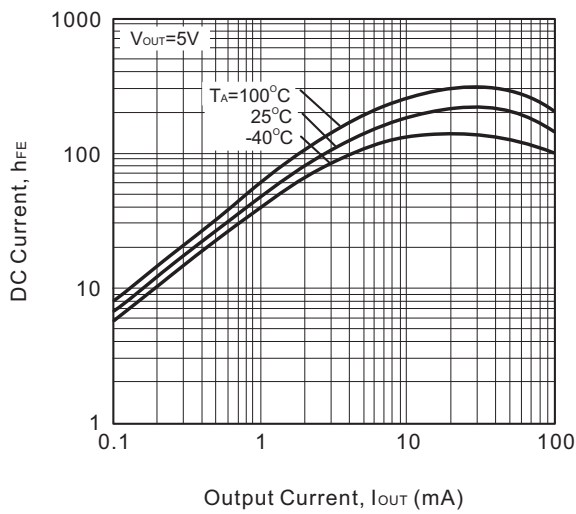
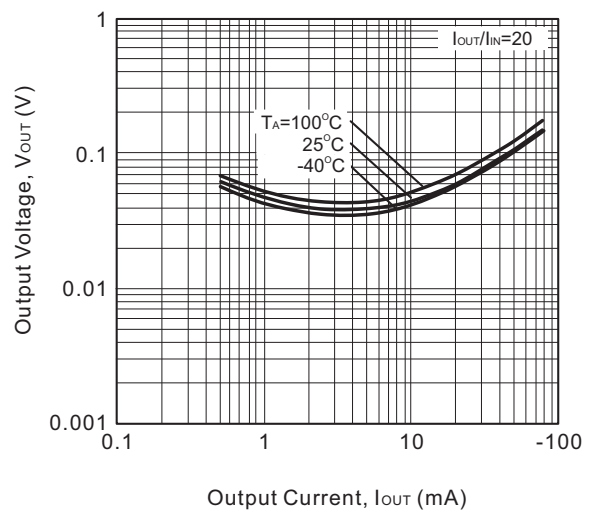
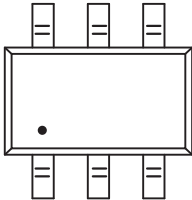
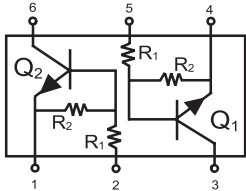


Fig.4 Output Voltage vs Output Current

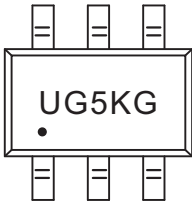


DTG5K

Pinning information

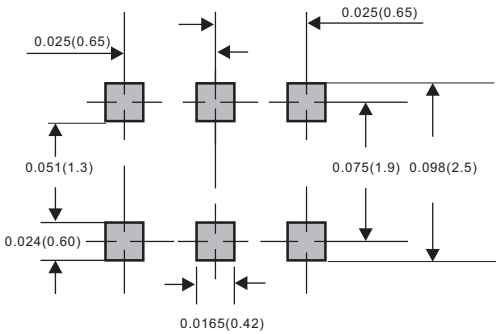
Pin	Simplified outline	Symbol
Pin2, 5 Base Pin1, 4 Emitter Pin3, 6 Collector		

Marking

Type numbe	Marking code
DTG5K	

Suggested solder pad layout

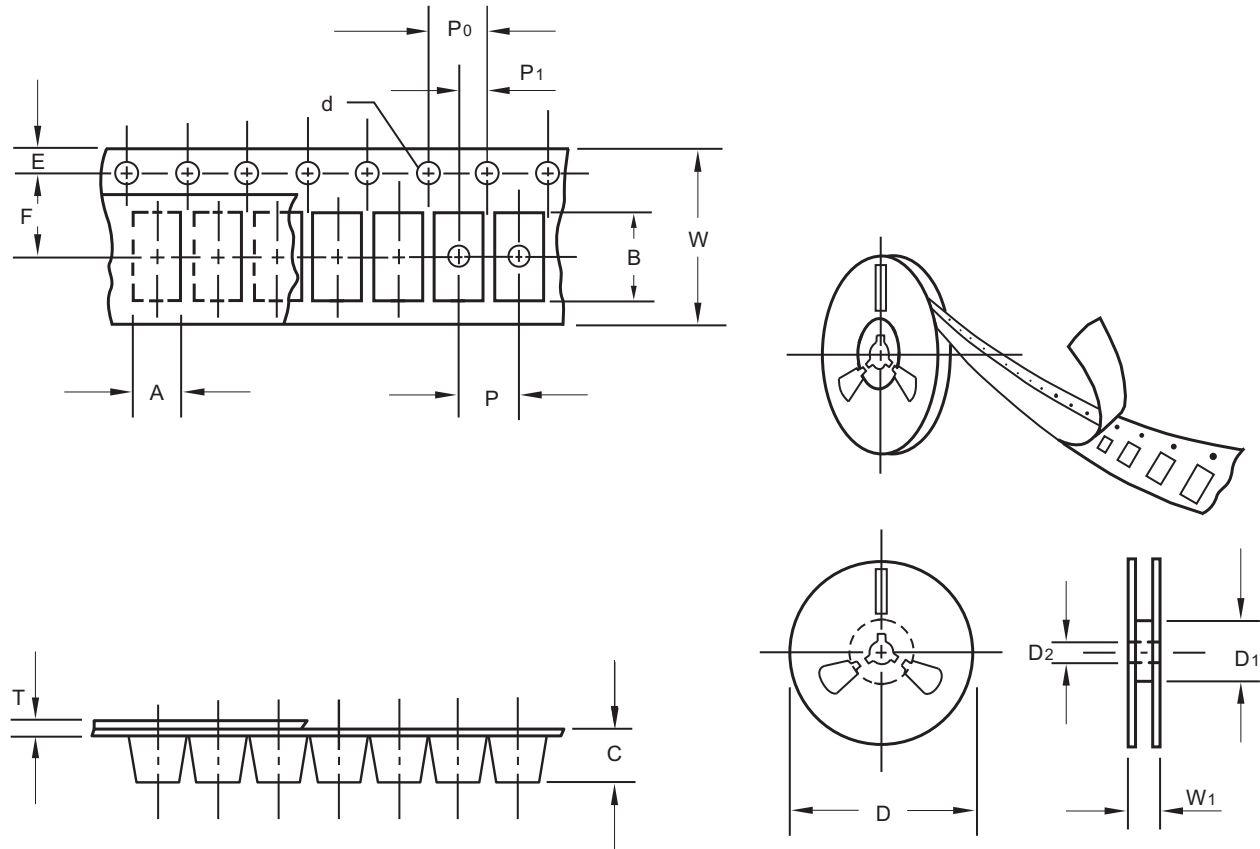
SOT-363



Dimensions in inches and (millimeters)

DTG5K

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-363
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

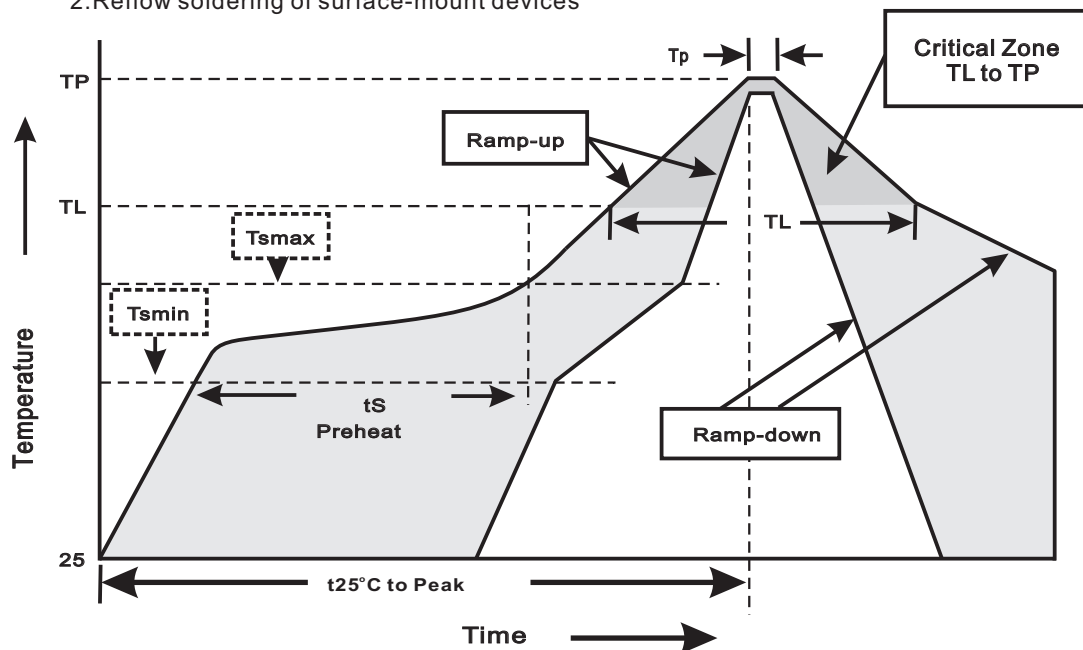
DTG5K

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-363	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.50

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes