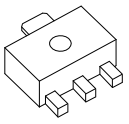
UDT1605 Preliminary ***NPN EPITAXIAL SILICON TRANSISTOR***

120V NPN SILICON HIGH VOLTAGE DARLINGTON TRANSISTOR



SOT-89

■ DESCRIPTION

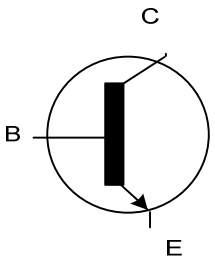
The UTC **UDT1605** is a n NPN Darlington transistor. Utilizing UTC's advanced techonology, **UDT1605** features ultra- high DC current gain and low collector-emitter saturation voltage, making it suitable for efficient driving functions.

The UTC **UDT1605** is suitable for a variety of efficient driving functions, etc.

■ FEATURES

* High breakdown voltage
* Low saturation voltage
* Ultra-high DC current gain

■ SYMBOL



■ RDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UDT1605L-AB3-R	UDT1605G-AB3-R	SOT-89	B	C	E	Tape Reel

UDT1605L-AB3-R (1)Packing Type (2)Package Type (3)Halogen Free	(1) R: Tape Reel (2) AB3: SOT-89 (3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CBO}	140	V
Collector-Emitter Voltage	V_{CEO}	120	V
Emitter-Base Voltage	V_{EBO}	10	V
Peak Pulse Current	I_{CM}	4	A
Continuous Collector Current	I_C	1	A
Power Dissipation at T_A=25°C (Note 1)	P_D	1 W	
Linear Derating Factor		8	mW/°C
Power Dissipation at T_A=25°C (Note 2)	P_D	2.8 W	
Linear Derating Factor		22	mW/°C
Junction Temperature	$T_{J:}$	-55~+150	°C
Storage Temperature Range	T_{STG}	-55~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	$R_{\theta JA}$	125	°C/W
Junction to Ambient (Note 2)	$R_{\theta JA}$	45	°C/W

Notes: 1. For a device surface mounted on 25mmx25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
2. For a device surface mounted on FR4 PCB measured at t ≤ 5 secs.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise stated)

PARAMETER SYMBOL		TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=100μA 140				V
Collector-Emitter Breakdown Voltage	BV_{CEO} I	$_C$=10mA (Note 1)	120			V
Emitter-Base Breakdown Voltage	BV_{EBO} I	$_E$=100μA 1	0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=10V			100	nA
		V_{CB}=120V, T_{AMB}=100°C			10	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=8V			0.1	μA
Collector Emitter Cut-Off Current	I_{CES}	V_{CES}=120V			10	μA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=250mA, I_B=0.25mA (Note 1)			1	V
		I_C=1A, I_B=1mA (Note 1)			1.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=1A, I_B=1mA (Note 1)			1.8	V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	I_C=1A,V_{CE}=5V (Note 1)			1.7	V
DC Current Gain	h_{FE}	I_C=50mA,V_{CE}=5V (Note 1)	2K			
		I_C=500mA, V_{CE}=5V (Note 1)	5K			
		I_C=1A, V_{CE}=5V (Note 1)	2K	100K		
		I_C=2A, V_{CE}=5V (Note 1)	0.5			
Transition Frequency	f_T	I_C=100mA, V_{CE}=10V, f=20MHz	150			MHz
Input Capacitance	C_{IBO} V	$_{CB}$=500mV, f=1MHz		90		pF
Output Capacitance	C_{OBO} V	$_{CB}$=10V, f=1MHz		15		pF
Turn-On Time	$t_{(ON)}$	I_C=500mA, V_{CE}=10V I_{B1}=I_{B2}=0.5mA	0.5			μs
Turn-Off Time	$t_{(OFF)}$	I_C=500mA, V_{CE}=10V I_{B1}=I_{B2}=0.5mA	1.6			μs

Note: 1. Measured under pulsed conditions. Pulse width=300μs. Duty cycle≤2%