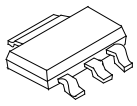
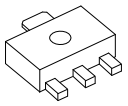
UDT1605 **Preliminary** ***NPN EPITAXIAL SILICON TRANSISTOR***

120V NPN SILICON HIGH VOLTAGE DARLINGTON TRANSISTOR



SOT-223



SOT-89

■ DESCRIPTION

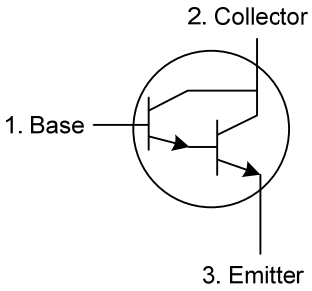
The UTC **UDT1605** is an NPN Darlington transistor. Utilizing UTC's advanced techonology, **UDT1605** features ultra-high DC current gain and low collector-emitter saturation voltage, making it suitable for efficient driving functions.

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



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UDT1605L-AA3-R	UDT1605G-AA3-R	SOT-223	B	C	E	Tape Reel
UDT1605L-AB3-R	UDT1605G-AB3-R	SOT-89	B	C	E	Tape Reel

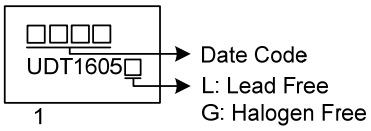
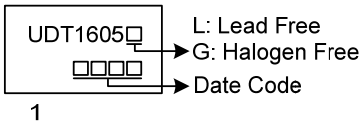
Note: Pin Assignment: B: Base C: Collector E: Emitter

UDT1605G-AA3-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AA3: SOT-223, AB3: SOT-89
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-89	SOT-223
	

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise stated)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V_{CBO}	140	V
Collector-Emitter Voltage		V_{CEO}	120	V
Emitter-Base Voltage		V_{EBO}	14	V
Peak Pulse Current		I_{CM}	4.0	A
Continuous Collector Current	SOT-223	I_C	1.5	A
	SOT-89		1.0	A
Power Dissipation at T_A=25°C (Note 1)	SOT-223	P_D	1.6	W
Linear Derating Factor			12.8	mW/°C
	SOT-89		1.0	W
			8.0	mW/°C
Power Dissipation at T_A=25°C (Note 2)	SOT-223	P_D	1.2	W
Linear Derating Factor			9.5	mW/°C
	SOT-89		2.8	W
			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)	SOT-223	$R_{\theta JA}$	78.1	°C/W
	SOT-89		125	°C/W
Junction to Ambient (Note 2)	SOT-223	$R_{\theta JA}$	104	°C/W
	SOT-89		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)	120			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=100μA	14			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}=10V			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	V
		I_C=1A, I_B=1mA (Note)			1.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=1A, I_B=1mA (Note)			1.8	V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	I_C=1A,V_{CE}=5V (Note)			1.7	V
DC Current Gain	h_{FE}	I_C=50mA,V_{CE}=5V (Note)	2K			
		I_C=500mA, V_{CE}=5V (Note)	5K			
		I_C=1A, V_{CE}=5V (Note)	2K		100K	
		I_C=2A, V_{CE}=5V (Note)	0.5K			
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: Measured under pulsed conditions. Pulse width=300μs. Duty cycle≤2%.