



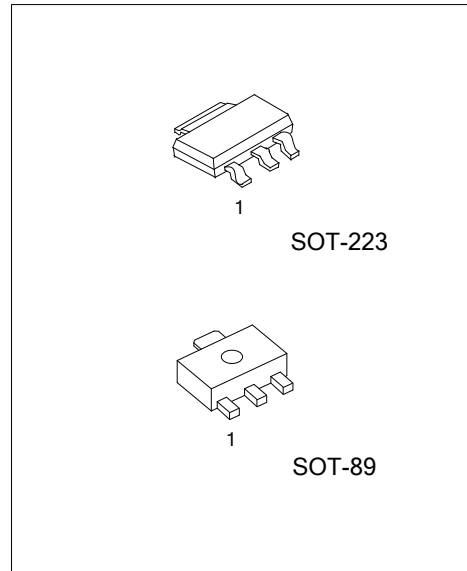
# UP1868

## PNP SILICON TRANSISTOR

### LOW SATURATION VOLTAGE PNP POWER TRANSISTOR

■ FEATURES

- \* Low saturation voltage with equivalent on-resistance be  $R_{CE(SAT)}$  about 40mΩ at 5A
- \* High gain that can be replace parts for power MOSFET.



■ ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UP1868G-AA3-R	UP1868G-AA3-R	SOT-223	B	C	E	Tape Reel
UP1868G-AB3-R	UP1868G-AB3-R	SOT-89	B	C	E	Tape Reel

<p>UP1868G-AA3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AA3: SOT-223, AB3: SOT-89 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-89	SOT-223



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CBO}$	-15	V
Collector-Emitter Voltage		$V_{CEO}$	-12	V
Emitter-Base Voltage		$V_{EBO}$	-6	V
Peak Pulse Current		$I_{C(PEAK)}$	-20	A
Continuous Collector Current		$I_C$	-6	A
Power Dissipation	SOT-223	$P_C$	3	W
	SOT-89		0.75	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

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.

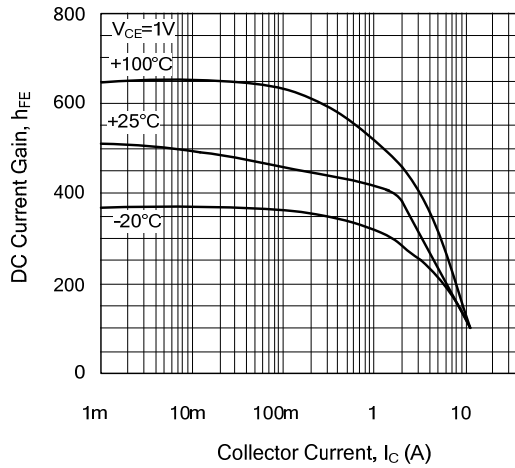
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Breakdown Voltage (Note)	$BV_{CBO}$	$I_C=-100\mu\text{A}$	-15			V
	$BV_{CEO}$	$I_C=-10\text{mA}$	-12			V
	$BV_{EBO}$	$I_E=-100\mu\text{A}$	-6			V
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=-500\text{mA}, I_B=-5\text{mA}$		-55	-100	mV
		$I_C=-2\text{A}, I_B=-50\text{mA}$		-132	-160	mV
		$I_C=-6\text{A}, I_B=-250\text{mA}$			-440	mV
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=-6\text{A}, I_B=-250\text{mA}$		-1050	-1200	mV
Base-Emitter Turn-On Voltage (Note)	$V_{BE(ON)}$	$V_{CE}=-1\text{V}, I_C=-6\text{A}$		-950	-1050	mV
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=-12\text{V}$			-10	nA
		$V_{CB}=-12\text{V}, T_A=100^\circ\text{C}$			-1.0	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=-6\text{V}$			-10	nA
DC Current Gain (Note)	$h_{FE1}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	300			
	$h_{FE2}$	$V_{CE}=-1\text{V}, I_C=-500\text{mA}$	300		1000	
	$h_{FE3}$	$V_{CE}=-1\text{V}, I_C=-5\text{A}$	200			
	$h_{FE4}$	$V_{CE}=-1\text{V}, I_C=-10\text{A}$	100			
Current Gain Bandwidth Product	$f_T$	$V_{CE}=-10\text{V}, I_C=-100\text{mA}, f=50\text{MHz}$		80		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-20\text{V}, f=1\text{MHz}$		161		pF
Switching Times	$t_{ON}$	$I_C=-4\text{A}, I_{B1}=-400\text{mA}$		120		ns
	$t_{OFF}$	$I_{B2}=400\text{mA}, V_{CC}=-10\text{V}$		116		ns

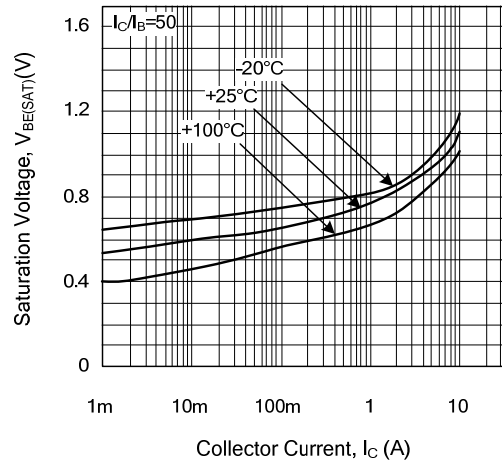
Note: Pulse test: Pulse Width=300 $\mu\text{s}$ , Duty Cycle  $\leq 2\%$

## TYPICAL CHARACTERISTICS

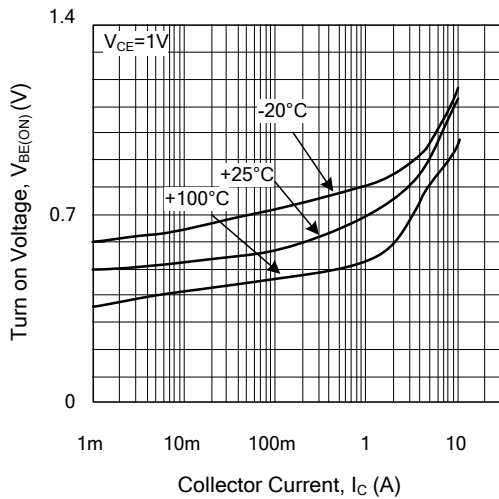
DC Current Gain vs. Collector Current



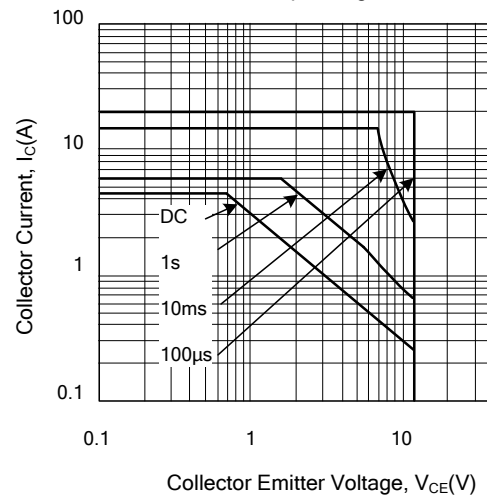
Saturation Voltage vs. Collector Current



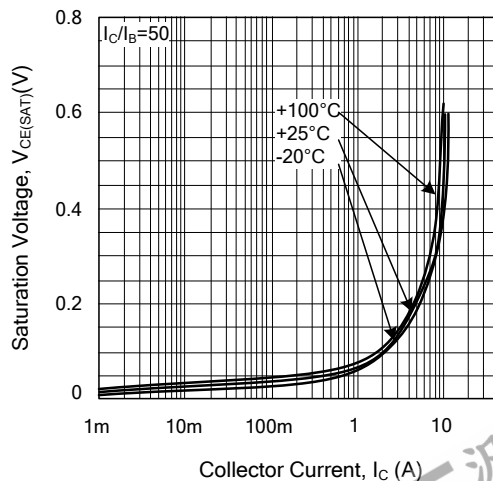
Turn on Voltage vs. Collector Current



Safe Operating Area



Saturation Voltage vs. Collector Current



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