



USSN4041

Preliminary

NPN EPITAXIAL SILICON TRANSISTOR

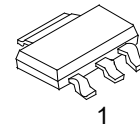
60V, 7.0A NPN LOW $V_{CE(SAT)}$ TRANSISTOR

DESCRIPTION

The UTC **USSN4041** is an NPN low $V_{CE(SAT)}$ Breakthrough.

FEATURES

- * Low collector-emitter saturation voltage $V_{CE(SAT)}$
- * High collector current capability: I_C and I_{CM}
- * Higher efficiency leading to less heat generation
- * Reduced printed-circuit board requirements
- * Complement: USSP4041



SOT-223

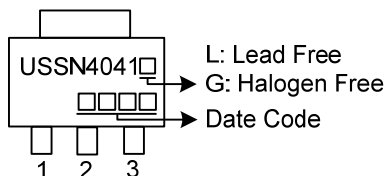
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USSN4041L-AA3-R	USSN4041G-AA3-R	SOT-223	B	C	E	Tape Reel

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

USSN4041G-AA3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AA3: SOT-223
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	DC	I_C	7
	Peak	I_{CM}	15
Power Dissipation ($T_A \leq 25^\circ\text{C}$)	P_D	1	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

Notes: 1. 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.

2. Device mounted on a FR4 printed-circuit board, single-sided copper; tin-plated, mounting pad for collector 1 cm².

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	125	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	30	$^\circ\text{C/W}$

Note: Device mounted on a FR4 printed-circuit board, single-sided copper; tin-plated, mounting pad for collector 1 cm².

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu\text{A}$, $I_E=0$	60			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$, $I_B=0$	60			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=100\mu\text{A}$, $I_C=0$	5			V
Collector-Base Cut-Off Current	I_{CBO}	$V_{CB}=40\text{V}$, $I_E=0$			100	nA
		$V_{CB}=60\text{V}$, $I_E=0$, $T_J=150^\circ\text{C}$			50	μA
Collector-Emitter Cut-Off Current	I_{CES}	$V_{CE}=60\text{V}$, $V_{BE}=0$			100	nA
Emitter-Base Cut-Off Current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$			100	nA
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=1\text{A}$, $I_B=50\text{mA}$		25	35	mV
		$I_C=2\text{A}$, $I_B=40\text{mA}$		55	75	mV
		$I_C=4\text{A}$, $I_B=40\text{mA}$		135	160	mV
		$I_C=4\text{A}$, $I_B=200\text{mA}$		75	110	mV
		$I_C=7\text{A}$, $I_B=350\text{mA}$		123	195	mV
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=1\text{A}$, $I_B=100\text{mA}$		0.81	0.9	V
		$I_C=4\text{A}$, $I_B=400\text{mA}$		0.93	1.05	V
Base-Emitter Turn-On Voltage(Note)	$V_{BE(ON)}$	$I_C=2\text{A}$, $V_{CE}=2\text{V}$		0.72	0.85	V
Dc Current Gain (Note)	h_{FE}	$V_{CE}=2\text{V}$, $I_C=500\text{mA}$	300	465		
		$V_{CE}=2\text{V}$, $I_C=1\text{A}$	300	455		
		$V_{CE}=2\text{V}$, $I_C=2\text{A}$	300	435		
		$V_{CE}=2\text{V}$, $I_C=4\text{A}$	250	400		
		$V_{CE}=2\text{V}$, $I_C=6\text{A}$	100	325		
		$V_{CE}=2\text{V}$, $I_C=7\text{A}$	50	270		

Note: Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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