



USS4041NZ

Preliminary

NPN SILICON TRANSISTOR

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

DESCRIPTION

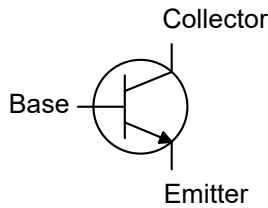
The UTC **USS4041NZ** is NPN low $V_{CE(SAT)}$ transistor in a medium power and flat lead SOT-223 Surface-Mounted Device (SMD) plastic package.

PNP complement: USS4041PZ.

FEATURES

- * Very low collector-emitter saturation voltage $V_{CE(SAT)}$
- * High collector current capability I_C and I_{CM}
- * High collector current gain (h_{FE}) at high I_C
- * High energy efficiency due to less heat generation

EQUIVALENT CIRCUIT



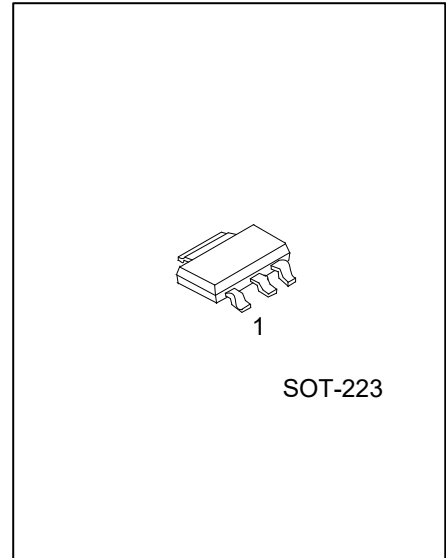
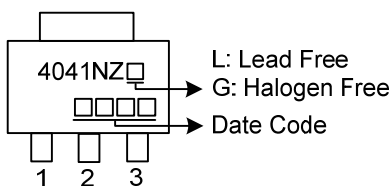
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS4041NZL-AA3-R	USS4041NZG-AA3-R	SOT-223	B	C	E	Tape Reel

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

USS4041NZG-AA3-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AA3: SOT-223 (3) G: Halogen Free and Lead Free, L: Lead Free
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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	I_C	7	A
Peak Collector Current	I_{CM}	15	A
Base Current	I_B	1	A
Power Dissipation	P_C	770	mW
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Operating Temperature	T_{OPR}	-40 ~ +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	160	$^{\circ}\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ 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}	$I_C=10\text{mA}, I_B=0$	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}	$V_{CB}=60\text{V}, I_E=0$			100	nA
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=48\text{V}, V_{BE}=0\text{V}$			100	nA
Emitter-Base Cut-off Current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$			100	nA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=1\text{A}, I_B=100\text{mA}$			0.9	V
		$I_C=4\text{A}, I_B=400\text{mA}$			1.05	V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	$V_{CE}=2\text{V}, I_C=2\text{A}$			0.85	V
DC Current Gain	h_{FE}	$V_{CE}=2\text{V}, I_C=500\text{mA}$	300			
		$V_{CE}=2\text{V}, I_C=1\text{A}$	300			
		$V_{CE}=2\text{V}, I_C=2\text{A}$	300			
		$V_{CE}=2\text{V}, I_C=4\text{A}$	250			
		$V_{CE}=2\text{V}, I_C=6\text{A}$	100			
		$V_{CE}=2\text{V}, I_C=7\text{A}$	50			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1\text{A}, I_B=10\text{mA}$			60	mV
		$I_C=1\text{A}, I_B=50\text{mA}$			35	mV
		$I_C=2\text{A}, I_B=40\text{mA}$			75	mV
		$I_C=4\text{A}, I_B=40\text{mA}$			160	mV
		$I_C=4\text{A}, I_B=200\text{mA}$			110	mV
		$I_C=7\text{A}, I_B=350\text{mA}$			195	mV

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