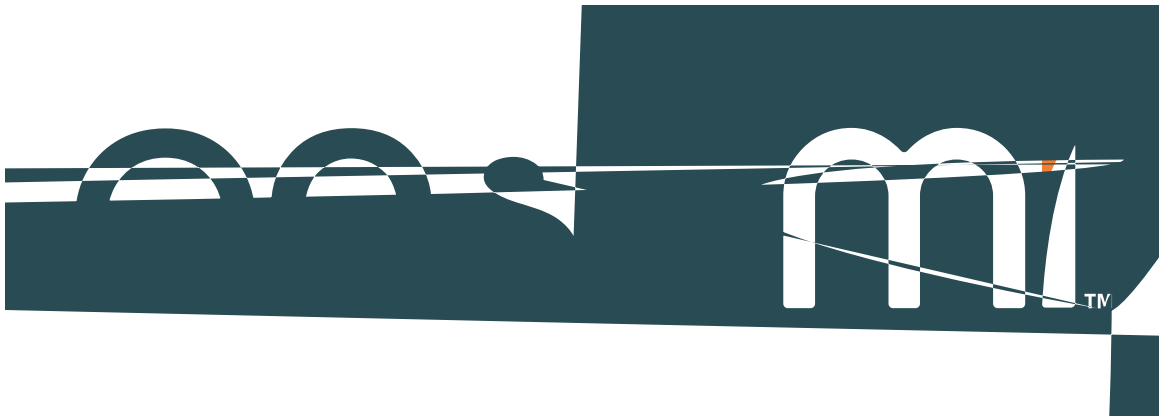


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# Silicon Carbide (SiC) Cascode JFET - EliteSiC, Power N-Channel, TO-220-3L, 650 V, 80 mohm

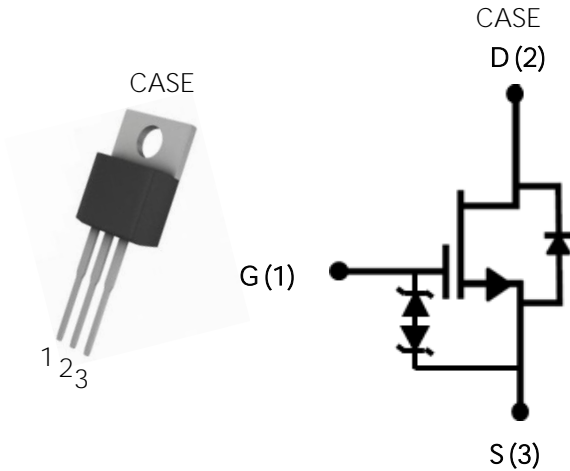
Rev. E, January 2025

## DATASHEET

# UJ3C065080T3S

### Description

The UJ3C065080T3S is a Silicon Carbide (SiC) Cascode JFET in a TO-220-3L package. It is configured as a normally-on SiC JFET co-packaged with a SiC Schottky diode. The device exhibits ultra-low gate charge and exceptional reverse recovery characteristics, making it ideal for switching inductive loads, and any application requiring standard gate drive.



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Part Number	Package	Marking
UJ3C065080T3S	TO-220-3L	UJ3C065080T3S





## Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Units
Drain-source voltage	$V_{DS}$		650	V
Gate-source voltage	$V_{GS}$	DC	-25 to +25	V
Continuous drain current <sup>1</sup>	$I_D$	$T_C = 25^\circ\text{C}$	31	A
		$T_C = 100^\circ\text{C}$	23	A
Pulsed drain current <sup>2</sup>	$I_{DM}$	$T_C = 25^\circ\text{C}$	65	A
Single pulsed avalanche energy <sup>3</sup>	$E_{AS}$	$L=15\text{mH}, I_{AS}=2.1\text{A}$	33	mJ
Power dissipation	$P_{tot}$	$T_C = 25^\circ\text{C}$	190	W
Maximum junction temperature	$T_{J,max}$		175	$^\circ\text{C}$
Operating and storage temperature	$T_J, T_{STG}$		-55 to 175	$^\circ\text{C}$
Max. lead temperature for soldering, %#, Zfca WlgY Zcf ) gYWt bXg	$T_L$		250	$^\circ\text{C}$

1. Limited by  $T_{J,max}$

2. Pulse width  $t_p$  limited by  $T_{J,max}$

3. Starting  $T_J = 25^\circ\text{C}$

## Thermal Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
	$R_q$			0.61	0.79	$^\circ\text{C}/\text{W}$





## Typical Performance - Dynamic

	Min	Typ	Max
$C_{iss}$			



## Typical Performance Diagrams

Figure 1. Typical output characteristics at  $T_J = -55^\circ\text{C}$ ,  
 $t_p < 250\text{ms}$

Figure 2. Typical output characteristics at  $T_J = 25^\circ\text{C}$ ,  
 $t_p < 250\text{ms}$

Figure 3. Typical output characteristics at  $T_J = 175^\circ\text{C}$ ,  
 $t_p < 250\text{ms}$

Figure 4. Normalized on-resistance vs. temperature  
at  $V_{GS} = 12\text{V}$  and  $I_D = 20\text{A}$









Figure 13. Typical capacitances at  $f = 100\text{kHz}$  and  $V_{GS} = 0\text{V}$

Figure 14. DC drain current derating









# TO-220-3L PACKAGE OUTLINE, PART MARKING AND TUBE SPECIFICATIONS

## PART MARKING

### PACKING TYPE

ANTI-STATIC TUBE

QUANTITY /TUBE : 50 UNITS

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