



## UPC8026

Preliminary

Power MOSFET

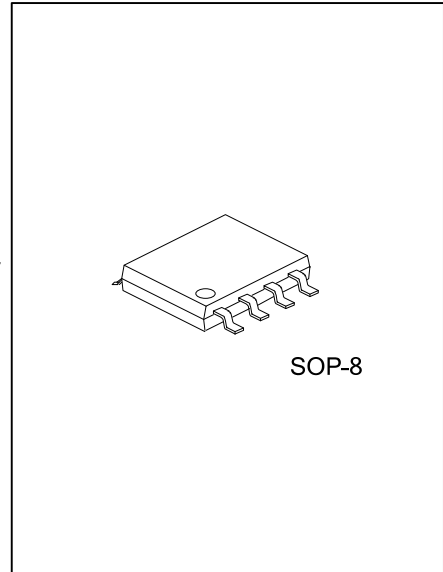
### 30V, 13A N-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **UPC8026** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low leakage current and high forward transfer admittance.

#### FEATURES

- \*  $V_{DS} = 30V, I_D = 13A$
- \*  $R_{DS(ON)} = 0.0051\Omega @ V_{GS} = 10V,$   
 $R_{DS(ON)} = 0.0075\Omega @ V_{GS} = 4.5V$
- \* High forward transfer admittance:  $|Y_{fs}| = 30S$
- \* Low leakage current:  $I_{DSS} < 10\mu A @ V_{DS} = 30V$



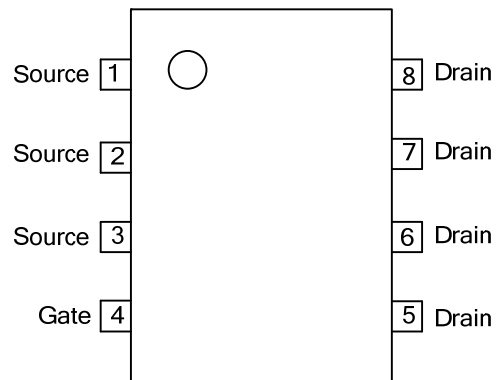
#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UPC8026L-S08-R	UPC8026G-S08-R	SOP-8	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UPC8026L-S08-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Lead Free</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel, T: Tube</li> <li>(2) S08: SOP-8</li> <li>(3) G: Halogen Free, L: Lead Free</li> </ul>
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### ■ PIN CONFIGURATION



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain-Gate Voltage ( $R_{GS}=20\text{k}\Omega$ )		$V_{DGR}$	30	V
Drain Current	Continuous (Note 2)	$I_D$	13	A
	Pulsed (Note 2)	$I_{DM}$	52	A
Avalanche Current		$I_{AR}$	13	A
Avalanche Energy	Single Pulsed (Note 4)	$E_{AS}$	44	mJ
	Repetitive (Note 3, 5)	$E_{AR}$	0.048	mJ
Power Dissipation (Nota 3)		$P_D$	1.9	W
Channel Temperature		$T_{CH}$	150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-55~+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. Ensure that the channel temperature does not exceed  $150^\circ\text{C}$ .
3. Device mounted on a glass-epoxy board FR-4,  $25.4 \times 25.4 \times 0.8$  (unit: mm)
4.  $V_{DD}=24\text{V}$ ,  $T_{CH}=25^\circ\text{C}$  (initial),  $L=0.2\text{mH}$ ,  $I_{AR}=13\text{A}$
5. Repetitive rating: pulse width limited by max channel temperature

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Nota 3)	$\theta_{JA}$	65.8	$^\circ\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =0V	30			V	
	V <sub>(BR)DSX</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =-20 V	10				
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0 V			10	μA	
Gate- Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA	
		V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA	
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =10 V, I <sub>D</sub> =1mA	1.3		2.5	V	
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.5A		7.5	10	mΩ	
		V <sub>GS</sub> =10V, I <sub>D</sub> =6.5A		5.1	6.6		
Forward Transfer Admittance	Y <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =6.5A	15	30		S	
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz		1800		pF	
Output Capacitance	C <sub>OSS</sub>				570		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>				370		pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge	Q <sub>G</sub>	V <sub>DD</sub> ≈24V, V <sub>GS</sub> =10V, I <sub>D</sub> =13 A		42		nC	
Gate to Source Charge	Q <sub>GS</sub>			6.5		nC	
Gate to Drain Charge	Q <sub>GD</sub>			14		nC	
Turn-ON Delay Time	t <sub>D(ON)</sub>	<p>Duty≤1%, t<sub>w</sub>=10μs</p>		28		ns	
Rise Time	t <sub>R</sub>				15		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>				54		ns
Fall-Time	t <sub>F</sub>				21		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Drain Reverse Current	Pulse (Note 1)	I <sub>DRP</sub>			52	A	
Forward Voltage (Diode)		V <sub>DSF</sub>	I <sub>DR</sub> =13A, V <sub>GS</sub> =0V		-1.2	V	

Note: 1. Ensure that the channel temperature does not exceed 150°C.

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