



## UGN65R350

Preliminary

POWER MOSFET

### GALLIUM NITRIDE (GaN) ENHANCEMENT-MODE POWER TRANSISTOR

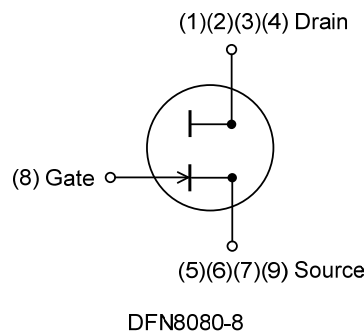
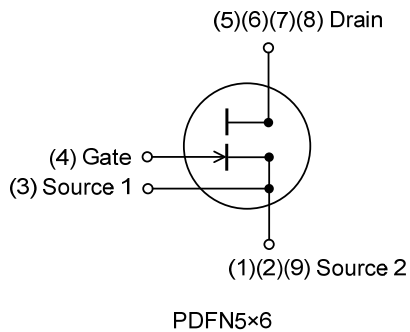
#### DESCRIPTION

The UTC **UGN65R350** is a gallium nitride (GaN) FETs power devices offers the most efficient GaN solution with lifetime reliability and cost advantages. GaN transistors switch much faster than silicon MOSFETs, offering the potential to achieve lower-switching losses.

#### FEATURES

- \*  $R_{DS(ON)} \leq 448.5 \text{ m}\Omega$  @  $V_{GS}=6.0V$ ,  $I_D=5.0A$
- \* High  $BV_{DSS}$  (>650V) Rating for Power Application
- \* Low Input Capacitance; Low FOM
- \* No reverse recovery charge
- \* Reverse conduction capability
- \* High operating frequency

#### SYMBOL

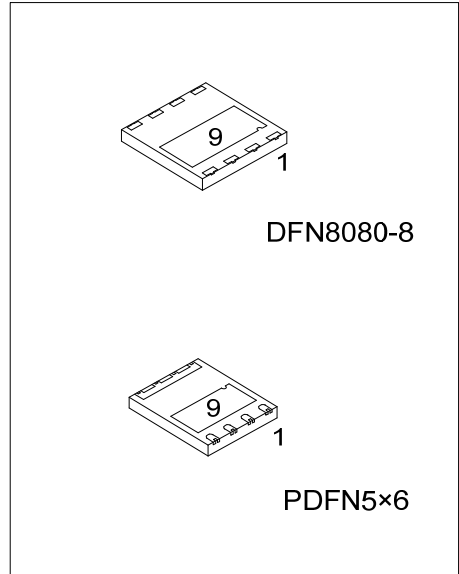


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment									Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	9	
UGN65R350L-K08-8080-R	UGN65R350G-K08-8080-R	DFN8080-8	D	D	D	D	S	S	S	G	S	Tape Reel
UGN65R350L-P5060-R	UGN65R350G-P5060-R	PDFN5x6	S2	S2	S1	G	D	D	D	D	S2	Tape Reel

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

UGN65R350G-K08-8080-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) K08-8080: DFN8080-8, P5060: PDFN5x6
	(3)Green Package	(3) G: Halogen Free and Lead Free L: Lead Free



### ■ MARKING

DFN8080-8	PDFN5×6
<p>UTC UGN65R350 • □□□□□□</p> <p>Lot Code ← → Date Code</p>	<p>UTC    UGN 65R350 • □□□□□□</p> <p>Lot Code ← → Date Code</p>

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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V <sub>DSS</sub>	650	V
Transient Drain to Source Voltage (Note 2)			V <sub>(TR)DSS</sub>	800	V
Gate-Source Voltage			V <sub>GSS</sub>	-6 ~ +7	V
Drain Current	Continuous	T <sub>C</sub> =25°C	I <sub>D</sub>	6.9	A
		T <sub>C</sub> =100°C		4.4	A
	Pulsed (t<10μS) (Note 3)		I <sub>DM</sub>	13.2	A
Power Dissipation	DFN8080-8		P <sub>D</sub>	52	W
	PDFN5×6			45	W
Junction Temperature			T <sub>J</sub>	-40 ~ +150	°C
Storage Temperature Range			T <sub>STG</sub>	-40 ~ +150	°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. In off-state, spike duty cycle  $D < 0.01$ , spike duration  $< 1\mu\text{s}$ .

3. Defined by product design and characterization. Value is not tested to full current in production.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DFN8080-8/PDFN5×6	$\theta_{JA}$	68	$^{\circ}\text{C/W}$
Junction to Case	DFN8080-8	$\theta_{JC}$	2.4	$^{\circ}\text{C/W}$
	PDFN5×6		2.8	$^{\circ}\text{C/W}$

Note: Device on 1 layer PCB.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =100μA, V <sub>GS</sub> =0V	650			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =650V, V <sub>GS</sub> =0V		0.3	3.0	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =6V, V <sub>DS</sub> =0V		65		μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =1mA	1.1	1.5	2.0	V
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =6.0V, I <sub>D</sub> =5.0A		345	448.5	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =400V, V <sub>GS</sub> =0V		70		pF
Output Capacitance	C <sub>OSS</sub>			13		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			1		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q <sub>G</sub>	V <sub>DS</sub> =400V, V <sub>GS</sub> =6V, I <sub>D</sub> =5.0A		2		nC
Gate to Source Charge	Q <sub>GS</sub>			0.18		nC
Output charge	Q <sub>OSS</sub>	V <sub>DS</sub> = 400V, V <sub>GS</sub> = 0V		17.2		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I <sub>S</sub>				7.4	A
Maximum Body-Diode Pulsed Current	I <sub>SM</sub>				13.2	A
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>D</sub> =5.0A , V <sub>DS</sub> =400V		0		nC

Notes: 1. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating ambient temperature.

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