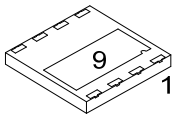
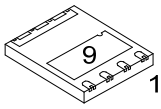
GALLIUM NITRIDE (GaN) ENHANCEMENT-MODE POWER TRANSISTOR



DFN8080-8



PDFN5×6

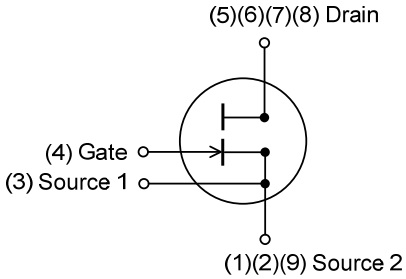
■ DESCRIPTION

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.

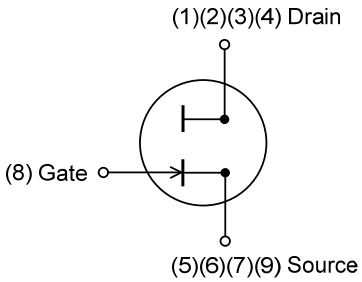
■ FEATURES

* $R_{DS(ON)}$ ≤ 448.5 mΩ @ 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



PDFN5×6



DFN8080-8

■ ORDERING INFORMATION

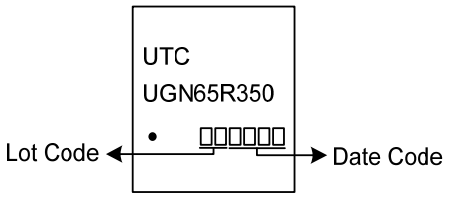
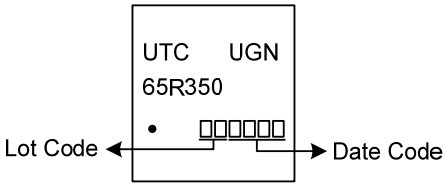
Ordering Number		Package	Pin Assignment									Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	9	
UGN65R350L-K08-8080-R	UGN65R350G-K08-8080-R	DFN8080-8	D	D	D	D	S	S	S	G	S	Tape Reel
UGN65R350L-P5060-R	UGN65R350G-P5060-R	PDFN5×6	S2	S2	S1	G	D	D	D	D	S2	Tape Reel

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: PDFN5×6
(3)Green Package	(3) G: Halogen Free and Lead Free L: Lead Free

■ MARKING

DFN8080-8	PDFN5×6
	

■ ABSOLUTE MAXIMUM RATING (T_C=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	650	V
Transient Drain to Source Voltage (Note 2)			$V_{(TR)DSS}$	800	V
Gate-Source Voltage			V_{GSS}	-6 ~ +7	V
Drain Current	Continuous	T_C=25°C	I_D	6.9	A
		T_C=100°C		4.4	A
	Pulsed (t<10μS) (Note 3)		I_{DM}	13.2	A
Power Dissipation	DFN8080-8		P_D	52	W
	PDFN5×6			45	W
Junction Temperature			T_J	-40 ~ +150	°C
Storage Temperature Range			T_{STG}	-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 < 1μs.
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	θ_{JA}	68	°C/W
Junction to Case	DFN8080-8	θ_{JC}	2.4	°C/W
	PDFN5×6		2.8	°C/W

Note: Device on 1 layer PCB.

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=100μA, V_{GS}=0V	650			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V		0.3	3.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=6V, V_{DS}=0V		65		μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=1mA	1.1	1.5	2.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=6.0V, I_D=5.0A		345	448.5	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=400V, V_{GS}=0V		70		pF
Output Capacitance	C_{OSS}			13		pF
Reverse Transfer Capacitance	C_{RSS}			1		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	V_{DS}=400V, V_{GS}=6V, I_D=5.0A		2		nC
Gate to Source Charge	Q_{GS}			0.18		nC
Output charge	Q_{OSS}	V_{DS}= 400V, V_{GS}= 0V		17.2		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				7.4	A
Maximum Body-Diode Pulsed Current	I_{SM}				13.2	A
Reverse Recovery Charge	Q_{rr}	I_D=5.0A , V_{DS}=400V		0		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating ambient temperature.