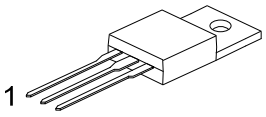
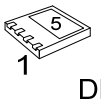
UGN65R150

Advance ***POWER MOSFET***

CASCODE GALLIUM NITRIDE (GaN) HEMT POWER TRANSISTOR



TO-220



DFN8080-4

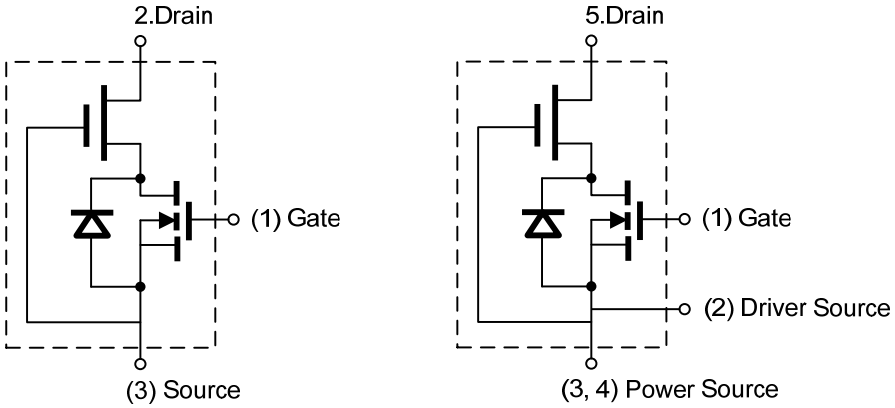
■ DESCRIPTION

The UTC **UGN65R150** is a cascaded 650V normally-on GaN HEMT in series with a low-voltage NMOSFET. The Provides high breakdown voltage, high current and high operating speed which is suitable for high power applications.

■ FEATURES

* $R_{DS(ON)} \leq 178\ m\Omega$ @ V_{GS}=10V, I_D=5.0A
* 650V enhancement mode power transistor
* High operating frequency

■ SYMBOL



TO-220 DFN8080-4

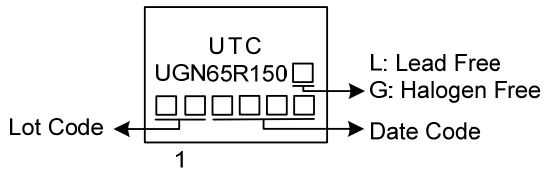
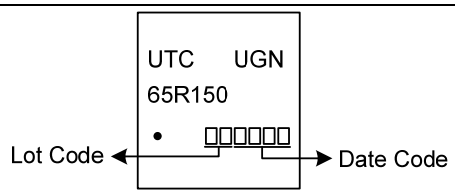
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment									Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	9	
UGN65R150L-TA3-R	UGN65R150G-TA3-R	TO-220	G	S	D	-	-	-	-	-	-	Tube
UGN65R150L-K04-8080-R	UGN65R150G-K04-8080-R	DFN8080-4	S	S	S	G	D	D	D	D	S	Tape Reel

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

UGN65R150G-TA3-T (1)Packing Type	(1) T: Tube, R: Tape Reel
(2)Package Type	(2) TA3: TO-220, K04-8080: DFN8080-4
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

TO-220	DFN8080-4
	

■ 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)			$V_{(TR)DSS}$	>700	V
Gate-Source Voltage			V_{GSS}	-20 ~ +20	V
Drain Current	Continuous	T_C=25°C	I_D	14.9	A
		T_C=100°C		10.1	A
	pulse width:10μs (Note 3)		I_{DM}	55.7	A
Power Dissipation		TO-220	P_D	125	W
		DFN8080-4		74	W
Junction Temperature			T_J	-55 ~ +150	°C
Storage Temperature Range			T_{STG}	-55 ~ +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	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	°C/W
	DFN8080-4		35 (Note)	°C/W
Junction to Case	TO-220	θ_{JC}	0.97	°C/W
	DFN8080-4		1.68 (Note)	°C/W

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

■ 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			28	μA
		V_{DS}=650V, V_{GS}=0V, T_J=150°C			100	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=1mA		1.8	3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.0A		145	178	mΩ
		V_{GS}=10V, I_D=5.0A, T_J=125°C		294		mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=400V, V_{GS}=0V, f=1.0MHz		825		pF
Output Capacitance	C_{OSS}			21.6		pF
Reverse Transfer Capacitance	C_{RSS}			3.85		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=400V, V_{GS}=0~10V, I_D=5.0A		8.6		nC
Gate to Source Charge	Q_{GS}			2.7		nC
Output charge	Q_{OSS}	V_{DS}=0~400V, V_{GS}=0V		32.8		nC
Turn-On Delay Time	$t_{D(ON)}$	V_{DS}=400V, V_{GS}=0~10V, I_{DS}=2.0A,R_G=25Ω		10		ns
Turn-Off Delay Time	$t_{D(OFF)}$			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Reverse Recovery Charge	Q_{rr}	V_{DS}=400V, I_D=5.0A		48		μC