



UGN65R360

POWER MOSFET

GALLIUM NITRIDE (GaN) ENHANCEMENT-MODE POWER TRANSISTOR

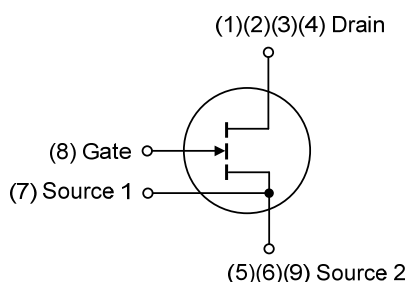
DESCRIPTION

The UTC **UGN65R360** is a gallium nitride (GaN) FETs with integrated gate drivers and GaN 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

- * $R_{DS(ON)} \leq 480 \text{ m}\Omega$ @ $V_{GS}=6.0\text{V}$, $I_D=2.0\text{A}$
- * High BV_{DSS} ($>650\text{V}$) Rating for Power Application
- * Low Input Capacitance; Low FOM
- * No reverse recovery charge
- * Reverse conduction capability

SYMBOL

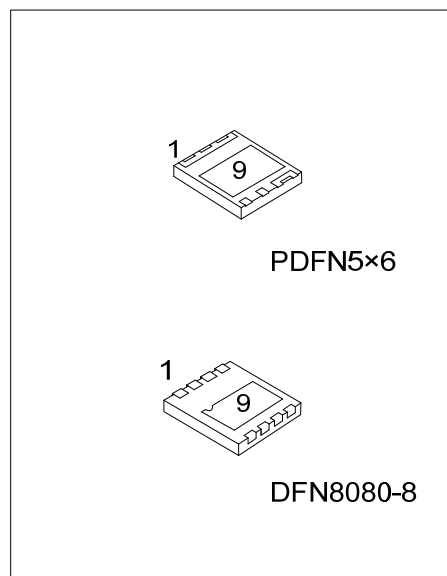


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment									Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	9	
UGN65R360L-K08-8080-R	UGN65R360G-K08-8080-R	DFN8080-8	D	D	D	D	S2	S2	S1	G	S2	Tape Reel
UGN65R360L-P5060-R	UGN65R360G-P5060-R	PDFN5×6	D	D	D	D	S2	S2	S1	G	S2	Tape Reel

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

UGN65R360G-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
<p>UTC UGN65R360</p> <p>• □□□□□□</p> <p>Lot Code → → Date Code</p>	<p>UTC UGN 65R360</p> <p>• □□□□□□</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 _{DSS}	650	V
Gate-Source Voltage			V _{GSS}	-7 ~ +7	V
Gate-Source Voltage Pulsed				-20 ~ +10	V
Drain Current	Continuous	T _C =25°C	I _D	4.3	A
		T _C =100°C		2.8	A
	Pulsed (Note 2)		I _{DM}	8.6	A
Power Dissipation	DFN8080-8		P _D	60	W
	PDFN5×6			40.3	W
Junction Temperature			T _J	+150	°C
Storage Temperature Range			T _{STG}	-20 ~ +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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $V_{DS(Transient)}$ is intended for surge rating during non-repetitive events, $t_{Pulse} < 1\mu\text{s}$.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DFN8080-8	θ_{JA}	38	$^{\circ}\text{C/W}$
	PDFN5×6		62.3	$^{\circ}\text{C/W}$
Junction to Case	DFN8080-8	θ_{JC}	2.08	$^{\circ}\text{C/W}$
	PDFN5×6		3.1	$^{\circ}\text{C/W}$

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

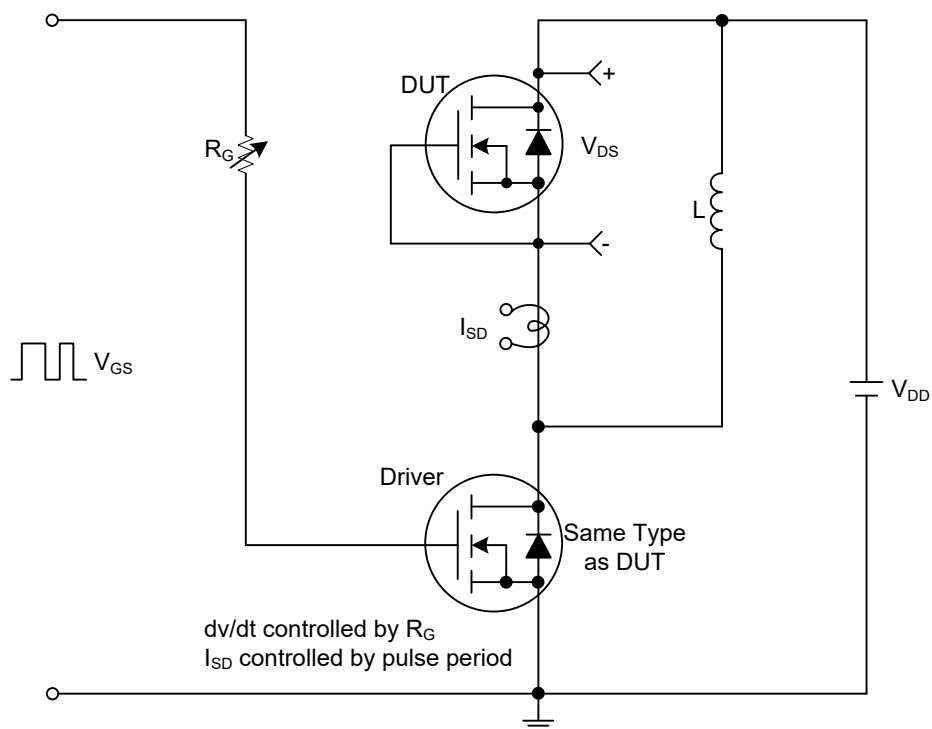
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =10μA, V _{GS} =0V	650			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V			10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =6V, V _{DS} =0V		200		μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =2.1mA	1.4	2.1	3.2	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =6.0V, I _D =2.0A		360	480	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =400V, V _{GS} =0V, f=1.0MHz		59		pF
Output Capacitance	C _{OSS}			16		pF
Reverse Transfer Capacitance	C _{RSS}			0.9		pF
Gate Resistance	R _G	f=1.0MHz, Open Drain		4.9		Ω
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =400V, V _{GS} =0~6V, I _D =2.0A		1.6		nC
Gate to Source Charge	Q _{GS}			0.3		nC
Gate to Drain Charge	Q _{GD}			0.8		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				4.3	A
Maximum Body-Diode Pulsed Current	I _{SM}				8.6	A
Source Drain Voltage Body Diode Forward Voltage	V _{SD}	I _{SD} =2.0A, V _{GS} =0V		3.2		V

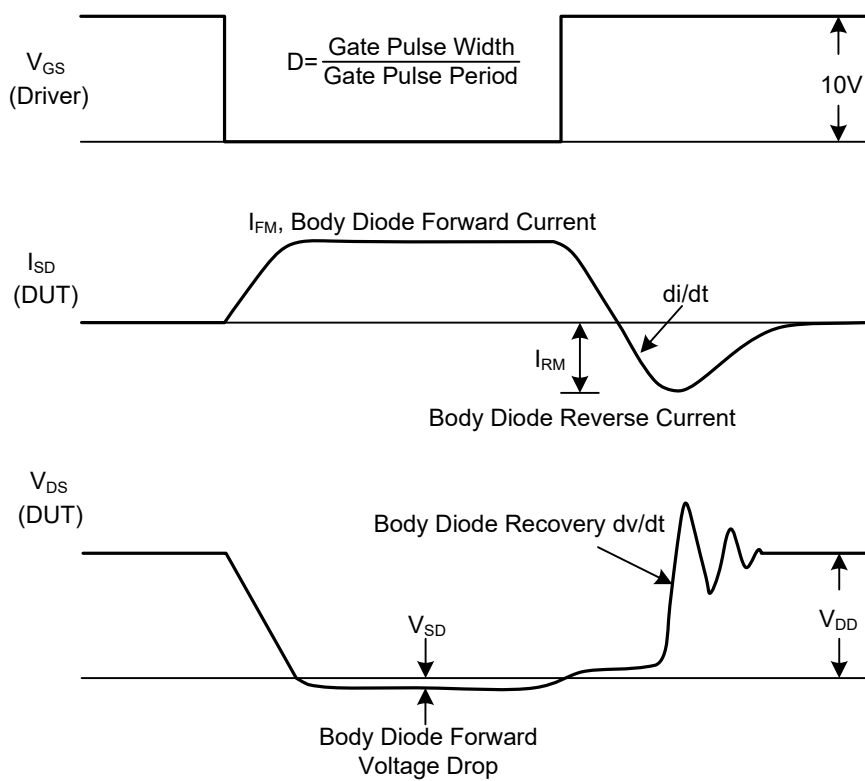
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



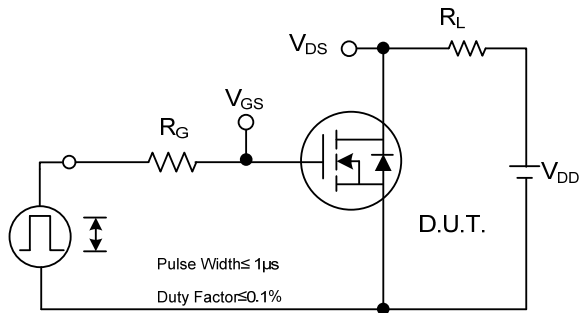
Peak Diode Recovery dv/dt Test Circuit



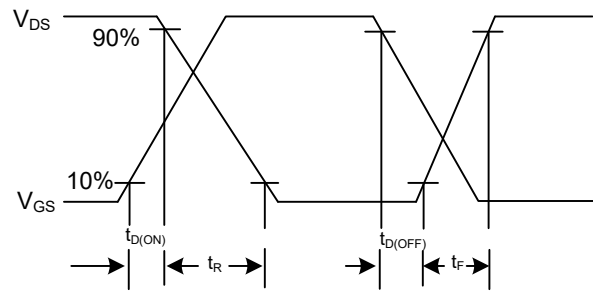
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

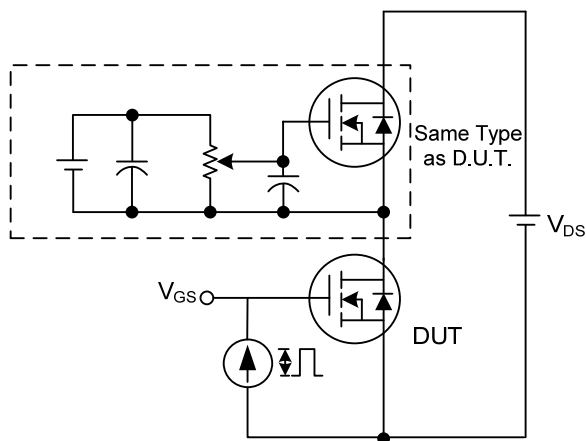
■ TEST CIRCUITS AND WAVEFORMS



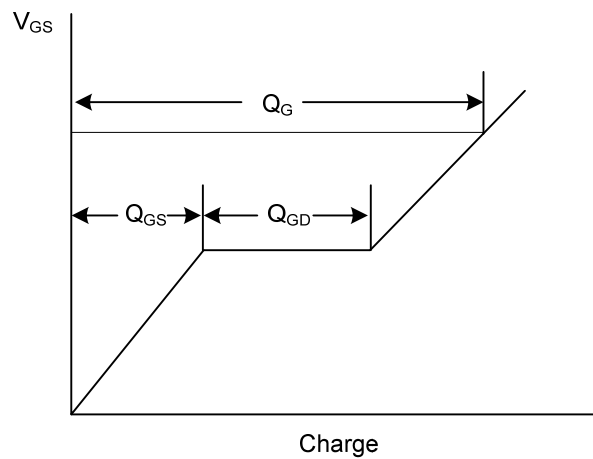
Switching Test Circuit



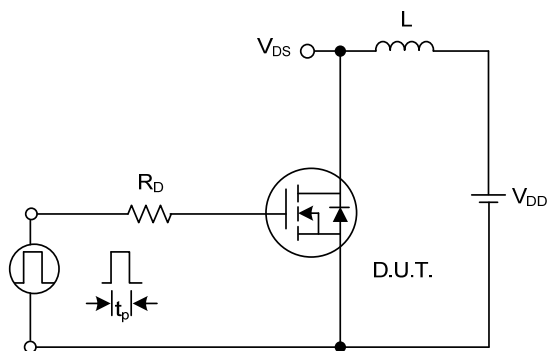
Switching Waveforms



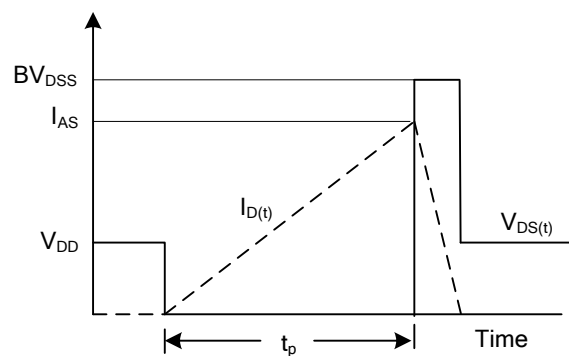
Gate Charge Test Circuit



Gate Charge Waveform

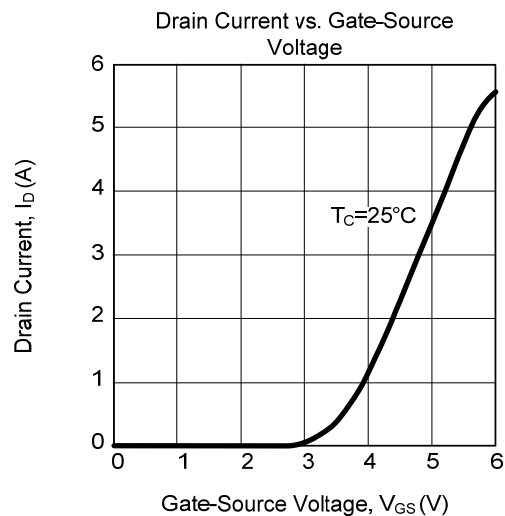
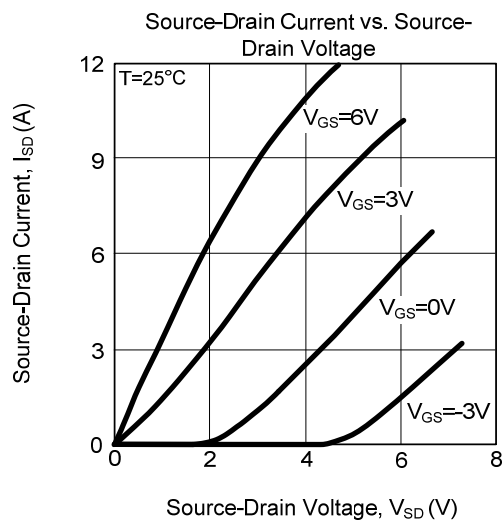
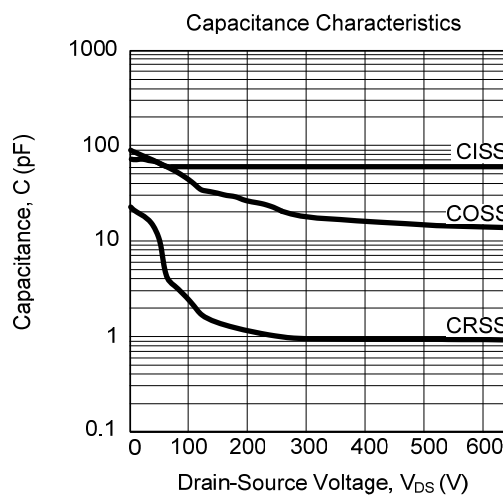
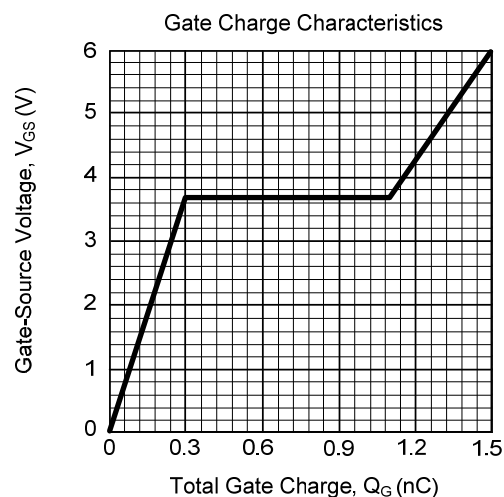
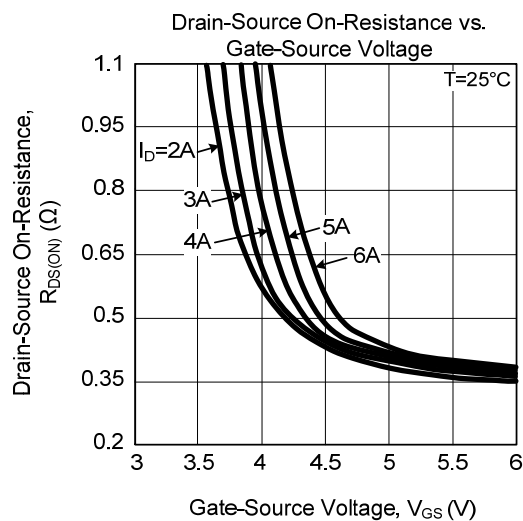
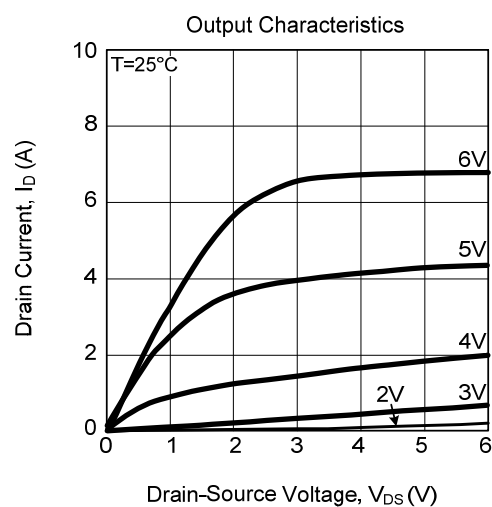


Unclamped Inductive Switching Test Circuit

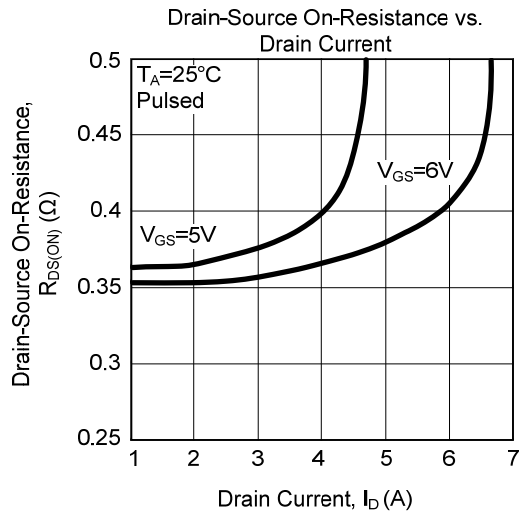


Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.