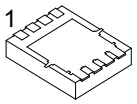
UTT15N15-H

Power MOSFET

15A, 150V P-CHANNEL POWER MOSFET



PDFN5×6

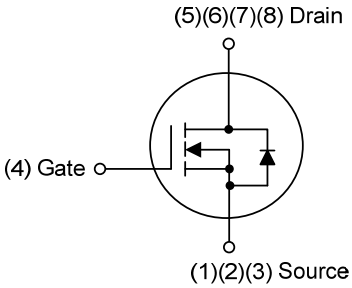
■ DESCRIPTION

The UTC **UTT15N15-H** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

* $R_{DS(ON)}$ ≤ 65 mΩ @ V_{GS}= 10V, I_D=6.0A
  $R_{DS(ON)}$ ≤ 90 mΩ @ V_{GS}=6.0V, I_D=4.0A
* V_{GS} Guarantee ±25V
* Improved dv/dt capability
* Fast switching
* Green device available

■ SYMBOL



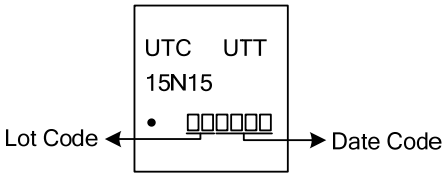
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT15N15L-P5060-R	UTT15N15G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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

UTT15N15G-P5060-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) P5060: PDFN5×6 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	150	V
Gate-Source Voltage			V_{GSS}	±25	V
Continuous Drain Current	Continuous	T_C=25°C	I_D	15	A
		T_C=100°C		9.5	A
Pulsed Drain Current	Pulsed (Note 2)		I_{DM}	60	A
Power Dissipation			P_D	135	W
Junction Temperature			T_J	+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. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

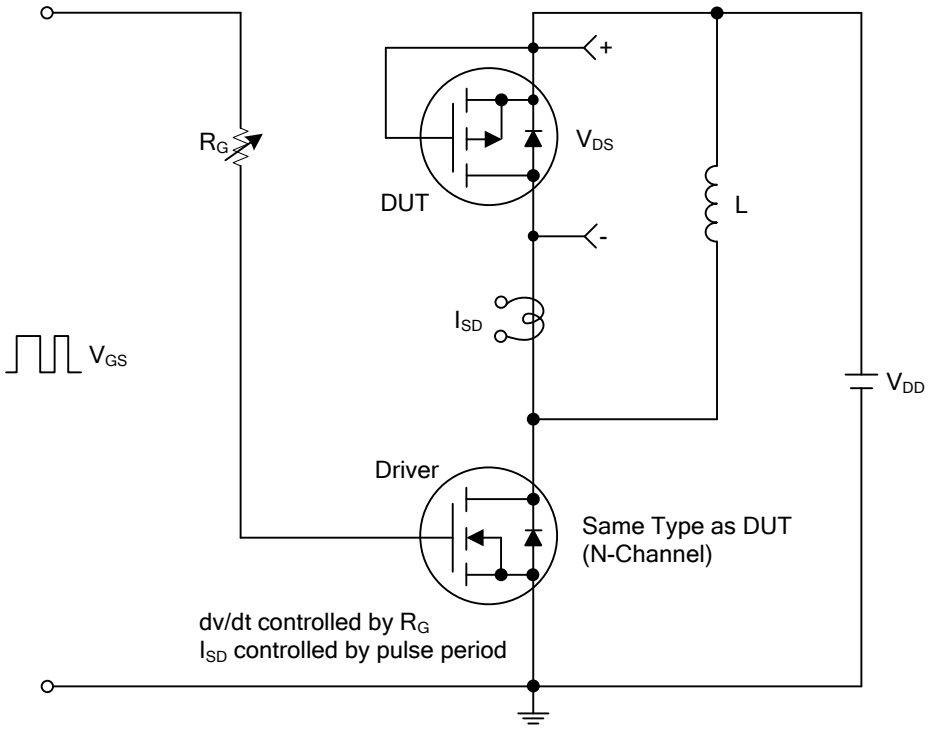
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	°C/W
Junction to Case	θ_{JC}	0.92	°C/W

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

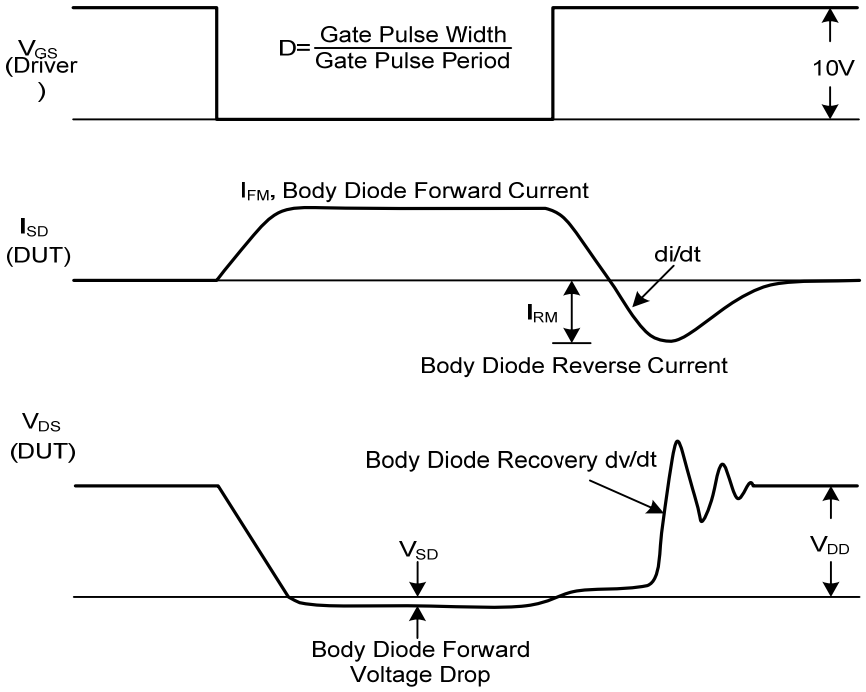
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	150			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=120V, V_{GS}=0V, T_J=25°C			10	μA
			V_{DS}=96V, V_{GS}=0V, T_J=125°C			30	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{DS}=0V ,V_{GS}=+25V			+100	nA
	Reverse		V_{DS}=0V ,V_{GS}=-25V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}= 10V, I_D=6.0A		52	65	mΩ
			V_{GS}=6.0V, I_D=4.0A		65	90	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=30V, V_{GS}=0V, f=1.0MHz		1790	3000	pF
Output Capacitance		C_{OSS}			160	300	pF
Reverse Transfer Capacitance		C_{RSS}			82	160	pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q_G	V_{DS}=30V, V_{GS}=10V, I_D=4.0A		30	45	nC
Gate to Source Charge		Q_{GS}			8.7	14	nC
Gate to Drain Charge		Q_{GD}			8.0	15	nC
Turn-on Delay Time (Note 1)		$t_{D(ON)}$	V_{DD}=30V, V_{GS}=10V, I_D=1.0A, R_G=6.0Ω		14.5	28	ns
Rise Time		t_R			19.2	18	ns
Turn-off Delay Time		$t_{D(OFF)}$			33.6	60	ns
Fall-Time		t_F			22.8	25	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Pulsed Current		I_S	V_G=V_D=0V , Force Current			15	A
Drain-Source Diode Forward Voltage (Note 1)		I_{SM}				30	A
Maximum Body-Diode Continuous Current		V_{SD}	I_S =1.0A, V_{GS}=0V			1.2	V

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

■ TEST CIRCUITS AND WAVEFORMS

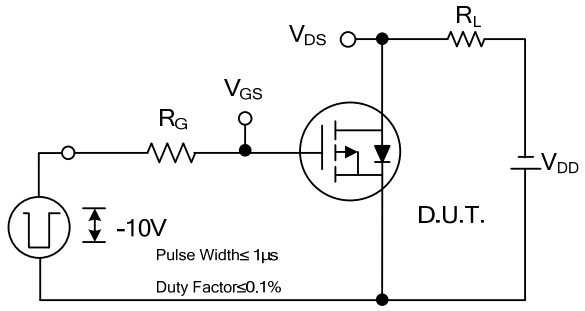


Peak Diode Recovery dv/dt Test Circuit

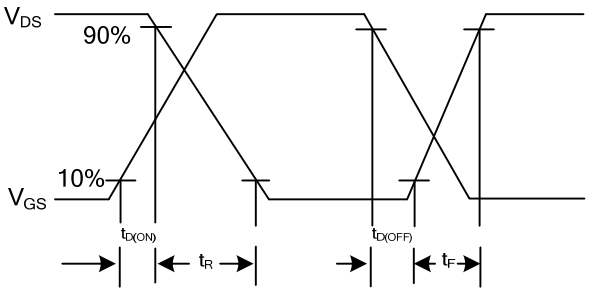


Peak Diode Recovery dv/dt Waveforms

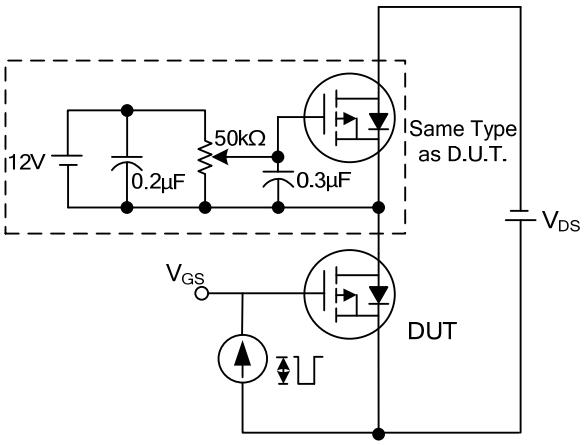
■ TEST CIRCUITS AND WAVEFORMS



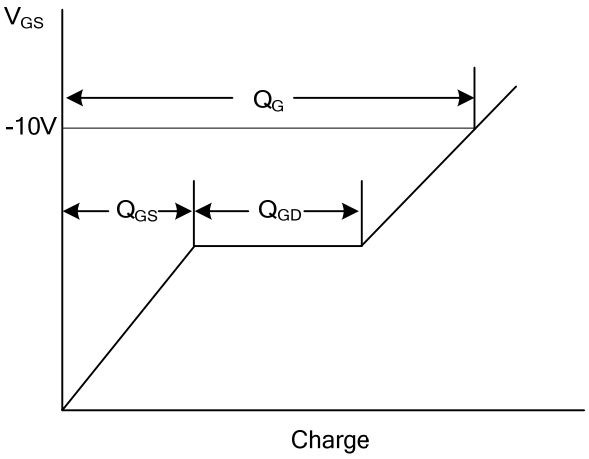
Switching Test Circuit



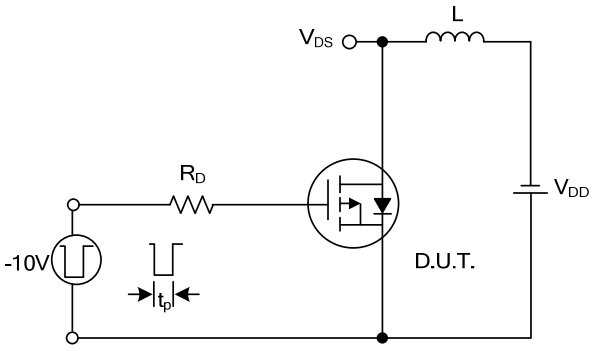
Switching Waveforms



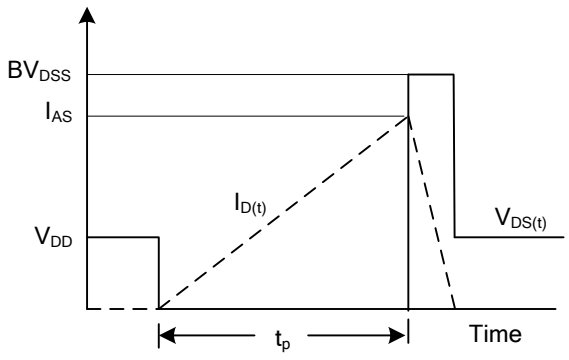
Gate Charge Test Circuit



Gate Charge Waveform



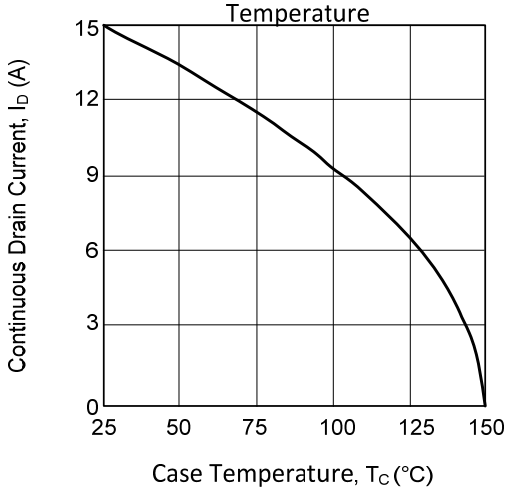
Unclamped Inductive Switching Test Circuit



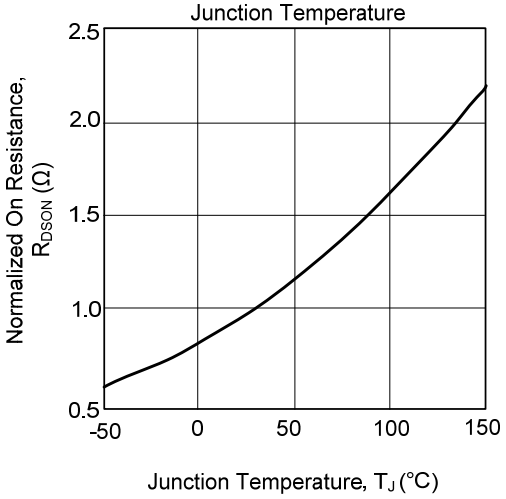
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

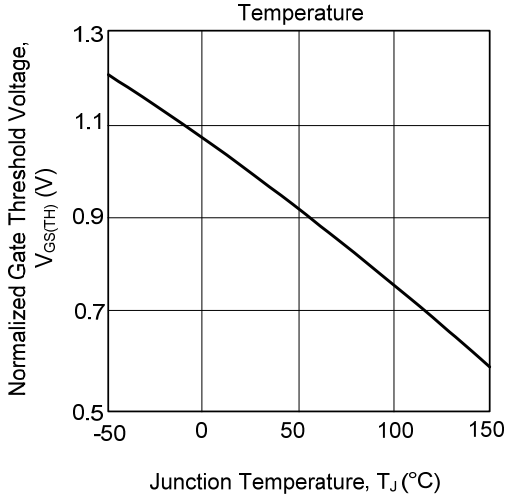
Continuous Drain Current vs. Case Temperature



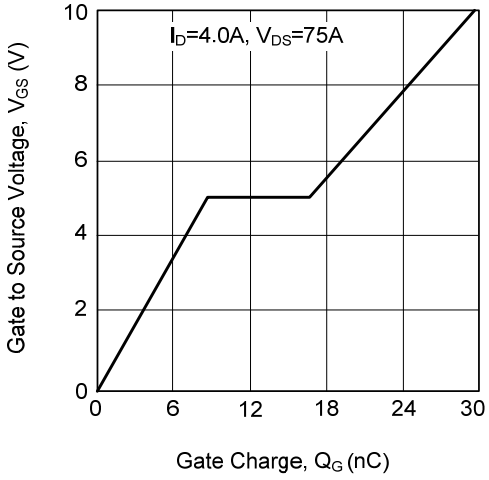
Normalized On Resistance vs. Junction Temperature



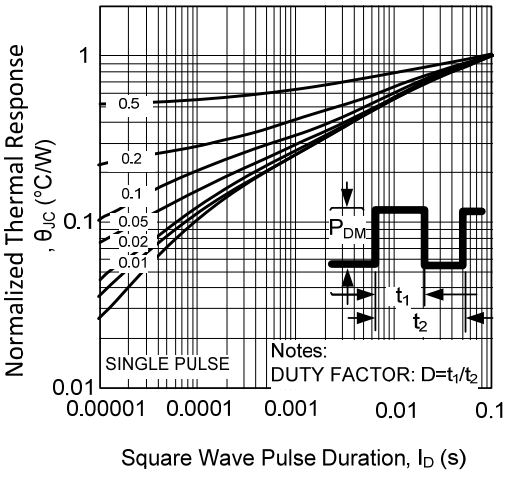
Normalized $V_{GS(TH)}$ vs Junction Temperature



Gate Charge Waveform



Normalized Transient Impedance



Maximum Safe Operation Area