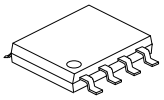
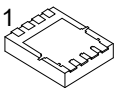
-8.9A, -150V P-CHANNEL POWER MOSFET



SOP-8



PDFN5×6

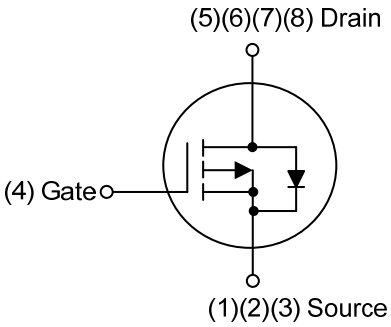
■ DESCRIPTION

The **UTT7115** an P-channel power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

■ FEATURES

* $R_{DS(ON)} \leq 269\ m\Omega$ @ V_{GS}= -10V, I_D= -4.0A
* $R_{DS(ON)} \leq 280\ m\Omega$ @ V_{GS}= -6.0V, I_D= -3.0A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



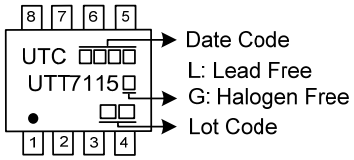
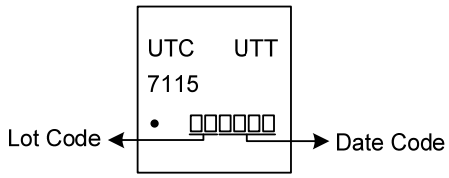
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT7115L-S08-R	UTT7115G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT7115L-P5060-R	UTT7115G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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

UTT7115G-S08-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8, P5060: PDFN5×6 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOP-8	PDFN5×6
	

■ 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}	±20	V
Continuous Drain Current		I_D	-8.9	A
Pulsed Drain Current (Note 2)		I_{DM}	-15	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	28.5	mJ
Peak Diode Recovery dv/dt		dv/dt	6.8	V/ns
Power Dissipation	SOP-8	P_D	2.5	W
	PDFN5×6		11	W
Junction Temperature		T_J	+150	°C
Storage Temperature		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.
3. L = 0.1mH, I_{AS} = -23.9A, V_{DD} = -30V, R_G = 25Ω, Starting T_J = 25°C
4. I_{SD} ≤ -8.9A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ_{JA}	90	°C/W
	PDFN5×6		83	°C/W
Junction to Case	SOP-8	θ_{JC}	11.36	°C/W
	PDFN5×6		4.46	°C/W

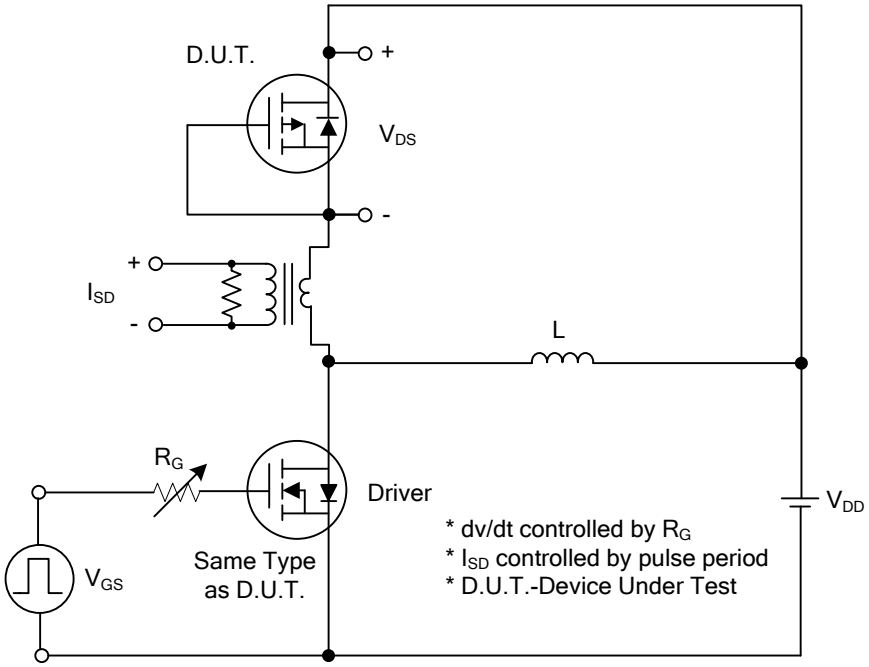
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

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

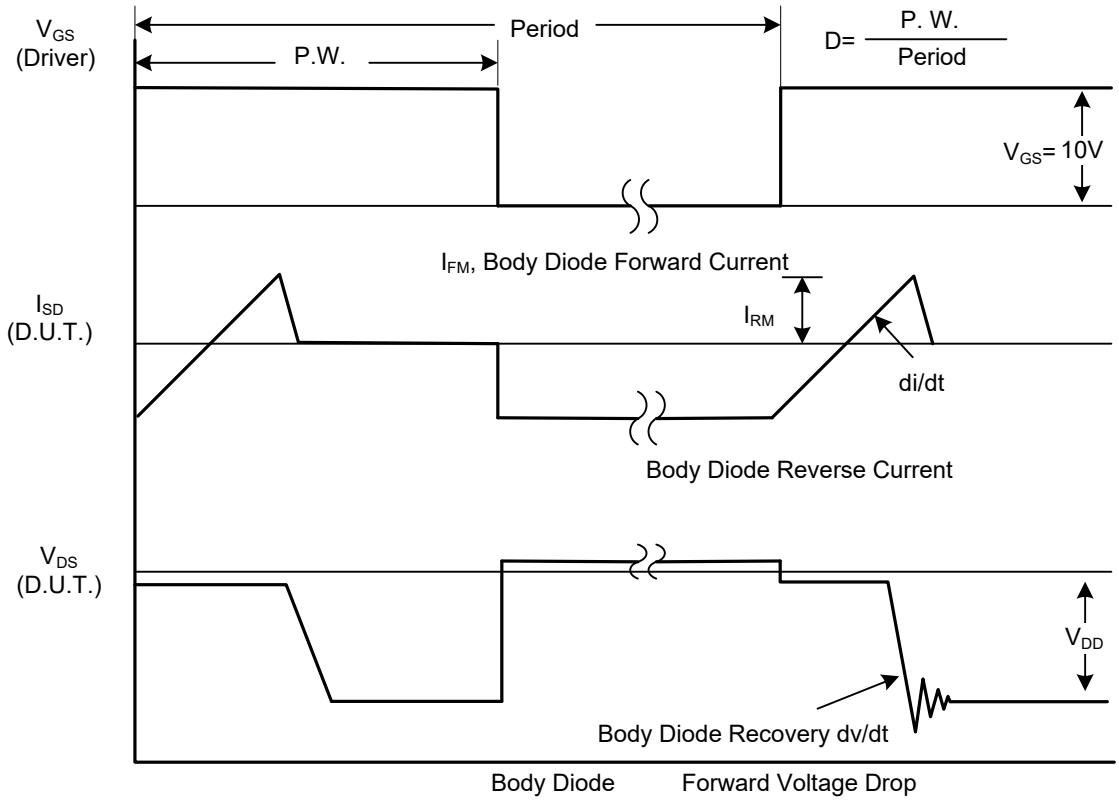
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-150			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-150V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=-250μA	-2.0		-4.0	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.0A			269	mΩ
		V_{GS}=-6.0V, I_D=-3.0A			280	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-25V, V_{GS}=0V, f=1.0MHz		2405		pF
Output Capacitance	C_{OSS}			111		pF
Reverse Transfer Capacitance	C_{RSS}			93.4		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	V_{DS}=-75V, V_{GS}=-10V, I_D=-3.0A (Note 1, 2)		41.3		nC
Gate Source Charge	Q_{GS}			16.6		nC
Gate Drain Charge	Q_{GD}			16.4		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	V_{DS}=-75V, V_{GS}=-10V, I_D=-3.0A R_G=3Ω (Note 1, 2)		12.8		ns
Turn-ON Rise Time	t_R			16.6		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			47.2		ns
Turn-OFF Fall-Time	t_F			22.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-8.9	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-15	A
Diode Forward Voltage	V_{SD}	I_S=-3.0A, V_{GS}=0V			-1.4	V
Body Diode Reverse Recovery Time	t_{rr}	I_S=-8.9A, V_{GS}=0V, dI/dt=100A/μs		96		ns
Body Diode Reverse Recovery Charge	Q_{rr}			346.8		nC

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

■ TEST CIRCUITS AND WAVEFORMS

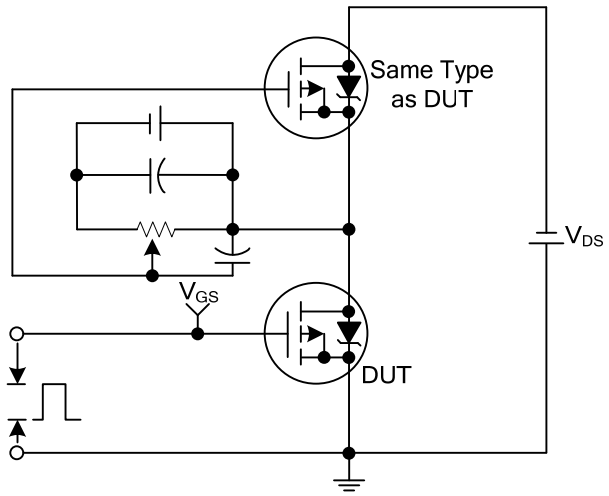


Peak Diode Recovery dv/dt Test Circuit

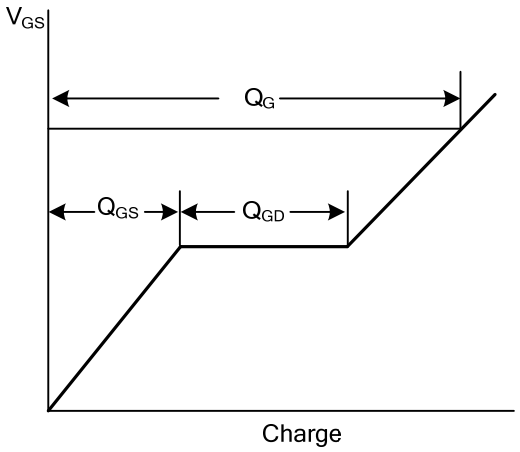


Peak Diode Recovery dv/dt Waveforms

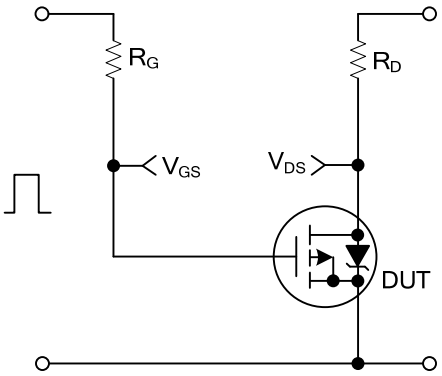
■ TEST CIRCUITS AND WAVEFORMS



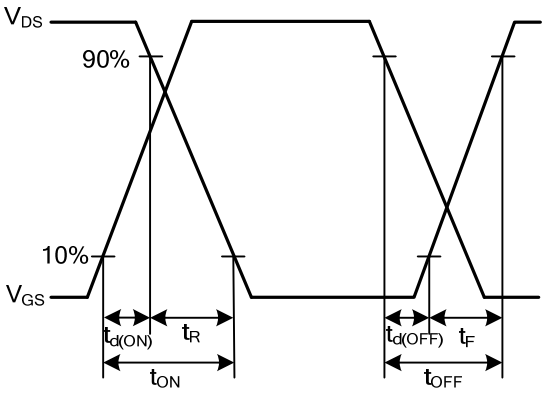
Gate Charge Test Circuit



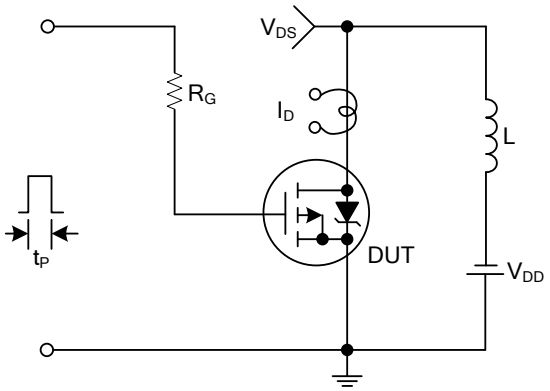
Gate Charge Waveforms



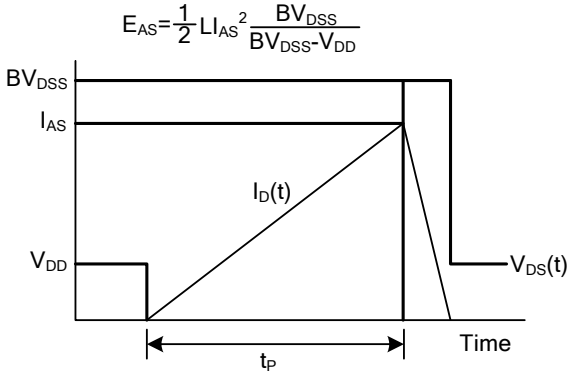
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms