



UTT4815-H

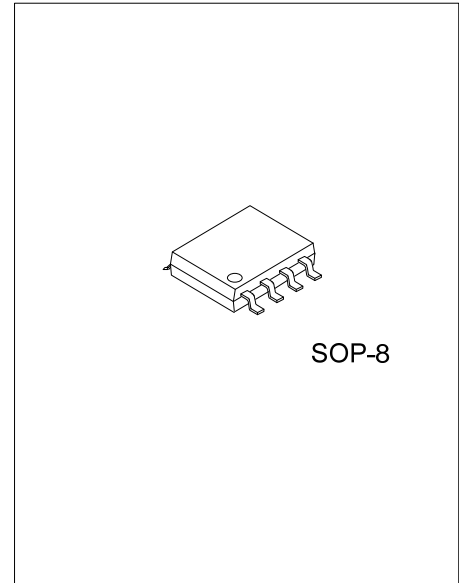
Power MOSFET

-8A, -30V P-CHANNEL POWER MOSFET

DESCRIPTION

The UTC **UTT4815-H** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremely gate charge with a 25V gate rating

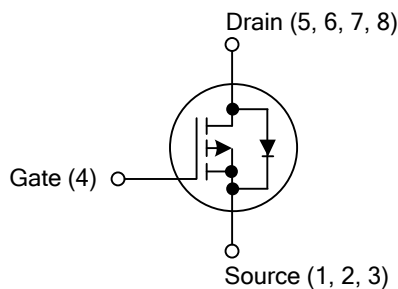
The UTC **UTT4815-H** is ESD protected and universally applied in PWM or used as a load switch.



FEATURES

* $R_{DS(ON)} < 20m\Omega @ V_{GS} = -10V, I_D = -8A$
 $R_{DS(ON)} < 32m\Omega @ V_{GS} = -4.5V, I_D = -5A$

SYMBOL



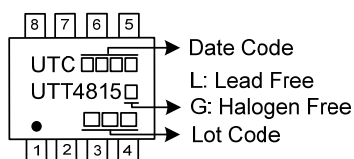
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT4815L-S08-R	UTT4815G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT4815G-S08-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	± 20	
Drain Current	Continuous (Note 2)	$T_A = 25^\circ\text{C}$	I_D	-8	A
		$T_A = 70^\circ\text{C}$		-5.1	
	Pulsed (Note 3)		I_{DM}	-32	
Power Dissipation (Note 2)			P_D	2.1	W
Junction Temperature			T_J	+150	$^\circ\text{C}$
Storage Temperature			T_{STG}	-55 ~ + 150	$^\circ\text{C}$

- 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. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10\text{s}$ thermal resistance rating.
3. Repetitive rating, pulse width limited by junction temperature.

■ THERMAL DATA (Note)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C/W}$

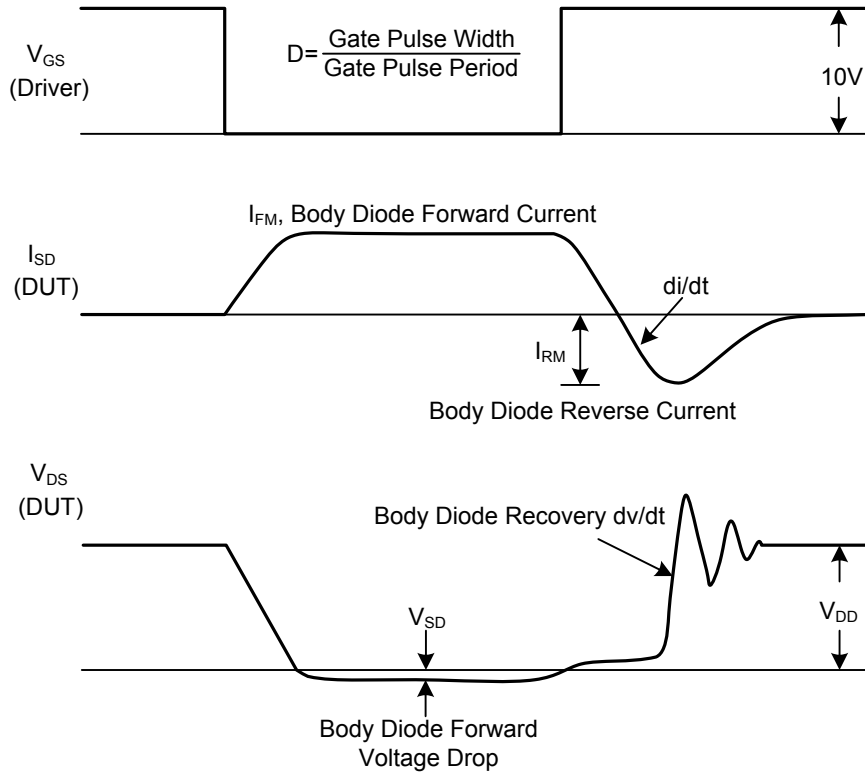
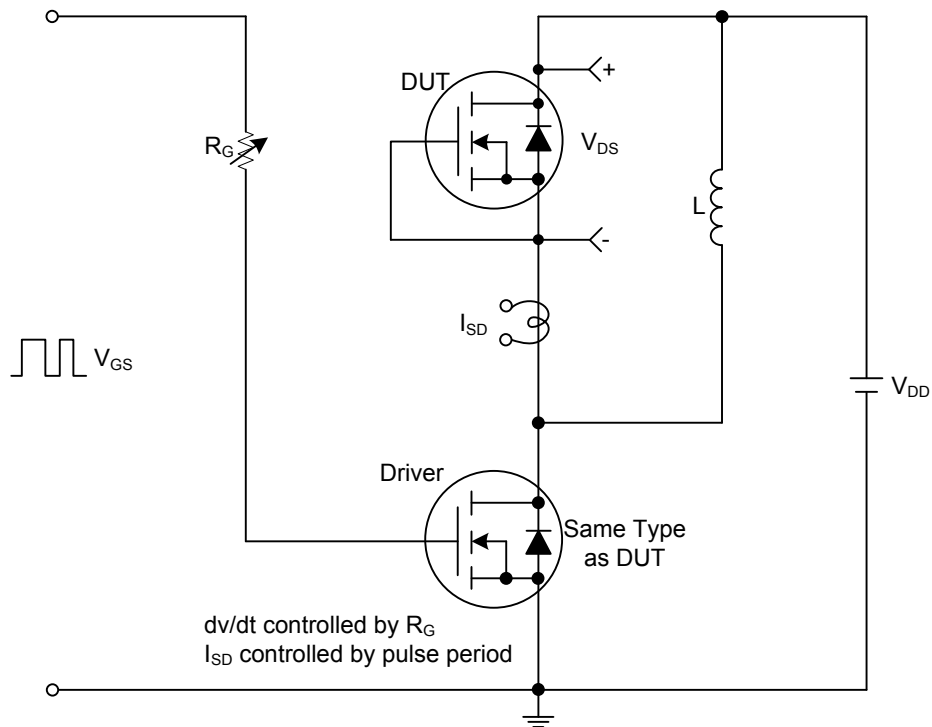
Note: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10\text{s}$ thermal resistance rating.

■ 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}	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$			-1	μA
Gate- Source Leakage Current	Forward Reverse	I_{GSS}	$V_{GS} = +20\text{V}, V_{DS} = 0\text{V}$ $V_{GS} = -20\text{V}, V_{DS} = 0\text{V}$		+100	nA
					-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1	-1.6	-2.5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -8\text{A}$		16.5	20	m Ω
		$V_{GS} = -4.5\text{V}, I_D = -5\text{A}$		25.6	32	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		1250	1820	pF
Output Capacitance	C_{OSS}		160	235		
Reverse Transfer Capacitance	C_{RSS}		90	130		
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS} = -24\text{V}, V_{GS} = -10\text{V},$ $I_D = -8.0\text{A}, I_D = -1.0\text{A}$ (Note 1,2)		6.0	17	nC
Gate Source Charge	Q_{GS}		2.1	6.0		
Gate Drain Charge	Q_{GD}		1.8	8.0		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V},$ $I_D = -1.0\text{A}, R_G = 6.0\Omega$ (Note 1,2)		5.8	11	ns
Turn-ON Rise Time	t_R		18.8	36		
Turn-OFF Delay Time	$t_{D(OFF)}$		46.9	89		
Turn-OFF Fall-Time	t_F		12.3	23		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-8	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = -1\text{A}, V_{GS} = 0\text{V}$			-1	V

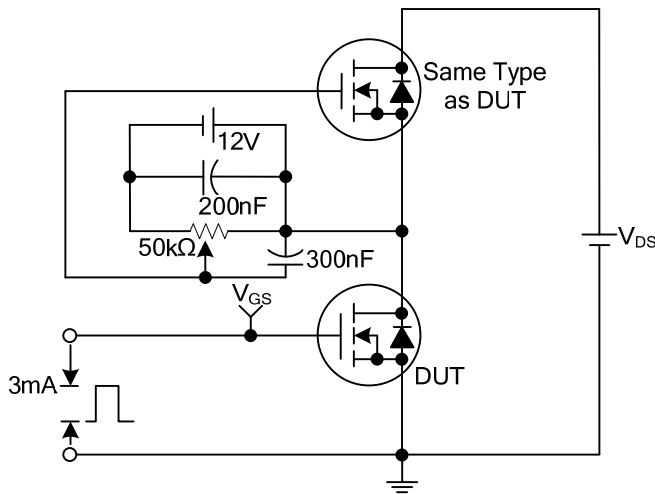
- Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature

TEST CIRCUITS AND WAVEFORMS

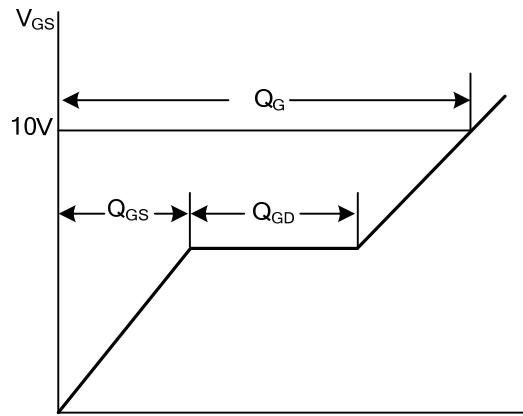


Peak Diode Recovery dv/dt Test Circuit and Waveforms

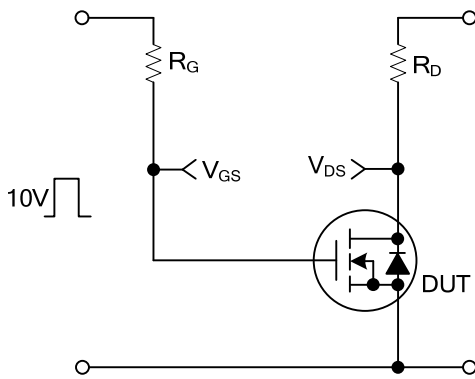
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



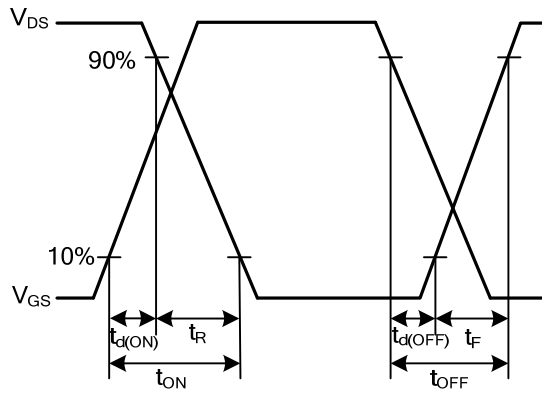
Gate Charge Test Circuit



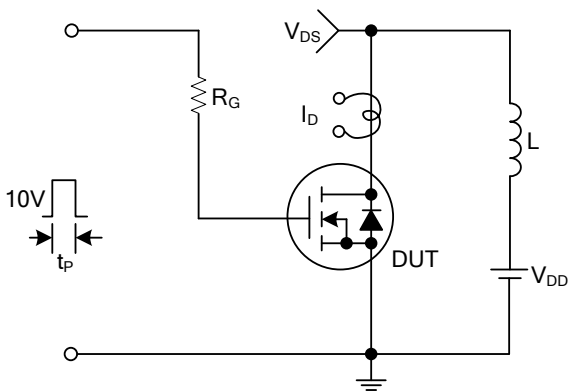
Gate Charge Waveforms



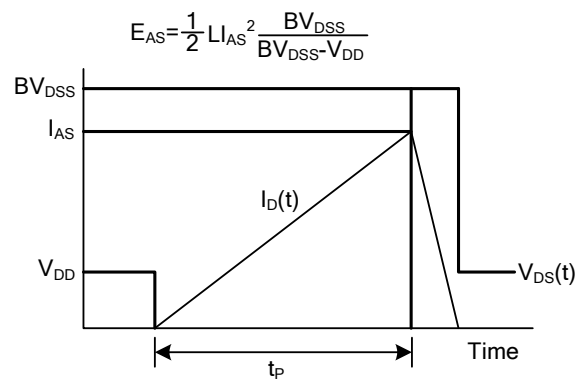
Resistive Switching Test Circuit



Resistive Switching Waveforms

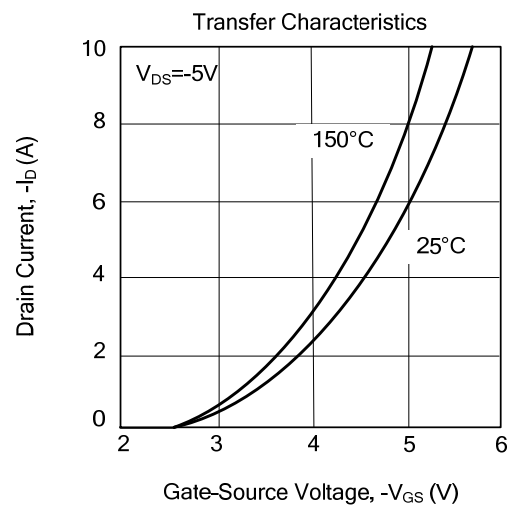
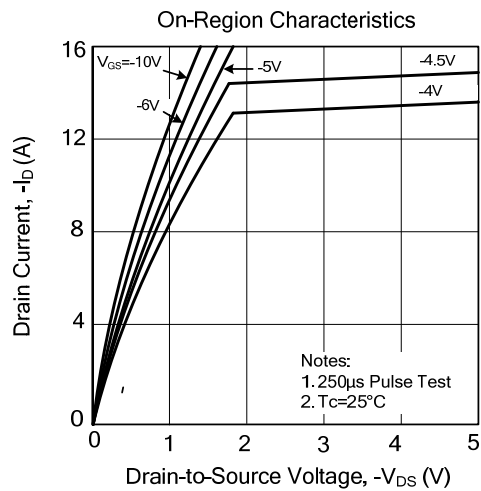
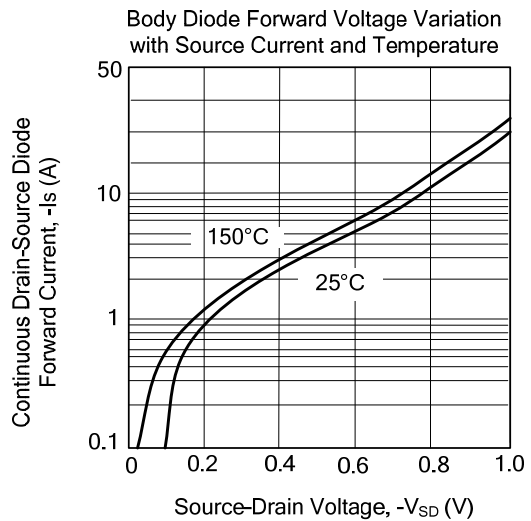
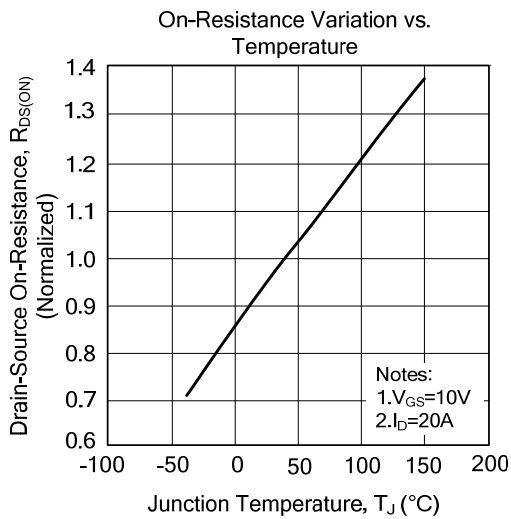
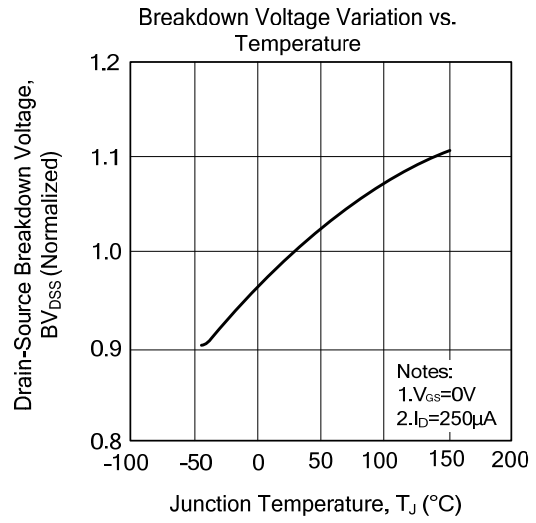
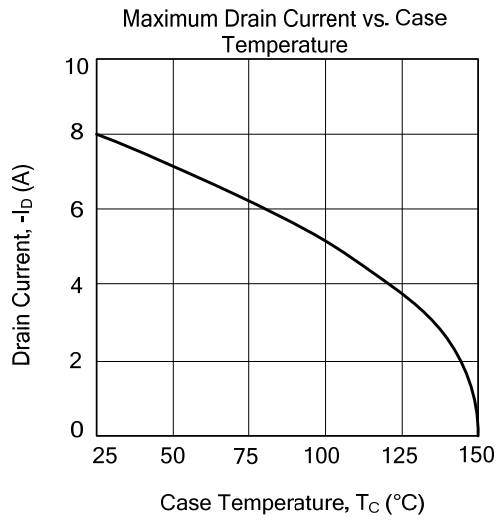


Unclamped Inductive Switching Test Circuit

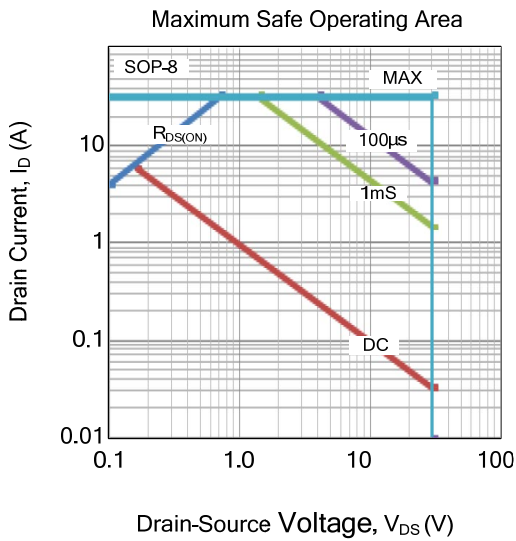
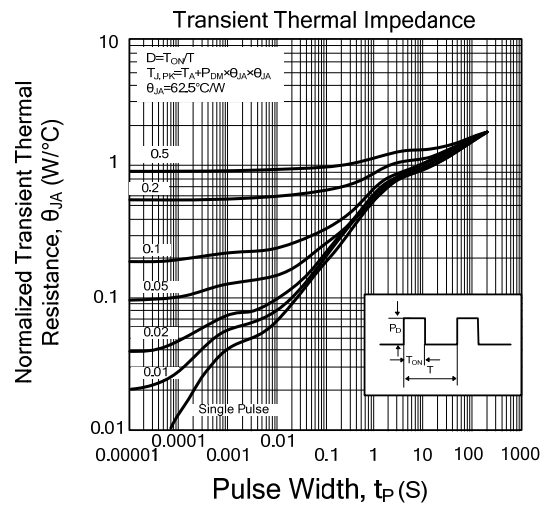
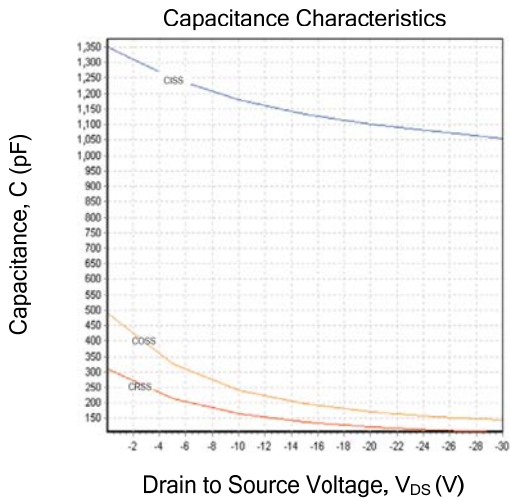
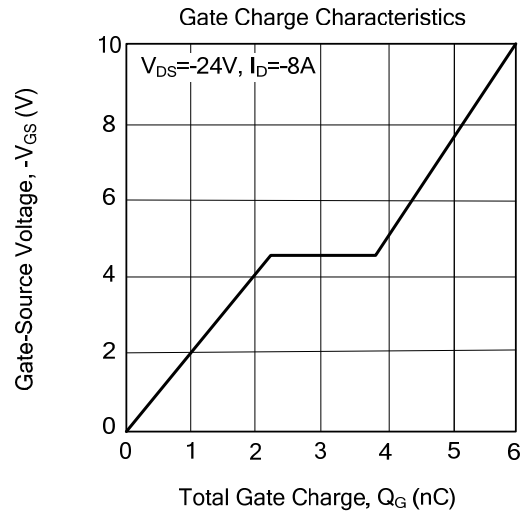
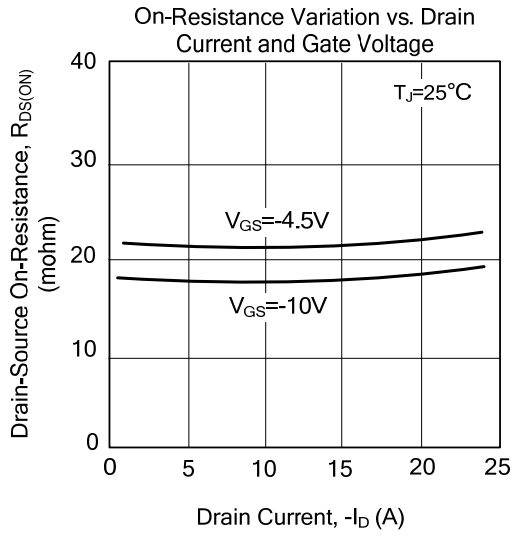


Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



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