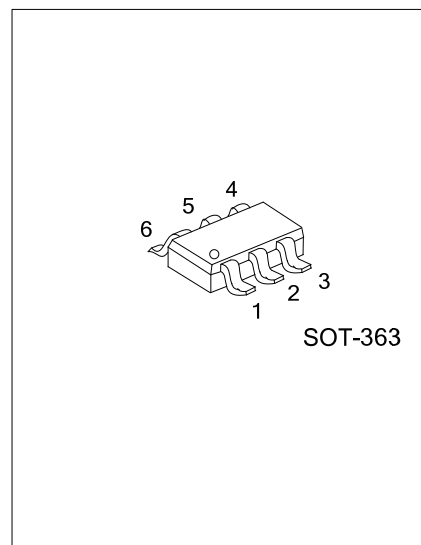
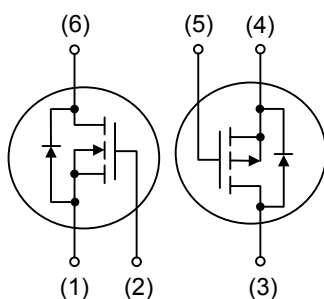


**UT6M2**

Preliminary

Power MOSFET**2.5V DRIVE N-CHANNEL
AND P- CHANNEL POWER
MOSFET****■ FEATURES**

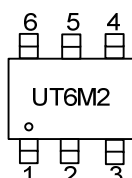
- * High-speed switching, low On-resistance.
- * Low voltage drive (2.5V drive).

■ SYMBOL**■ ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT6M2L-AL6-R	UT6M2G-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

Note: Pin Assignment: E: Emitter B: Base C: Collector

 UT6M2G-AL6-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING

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

PARAMETER		SYMBOL	RATINGS		UNIT
			N-CHANNEL	P-CHANNEL	
Drain-Source Voltage		V_{DSS}	30	-20	V
Gate-Source Voltage		V_{GSS}	± 12	± 12	V
Drain Current	Continuous	I_D	1.5	-1	A
	Pulsed (Note 2)	I_{DM}	3	-2	A
Power Dissipation		P_D	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. Repetitive Rating : Pulse width limited by maximum junction temperature.

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	125 (Note)	$^{\circ}\text{C/W}$

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

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

N-channel

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	30			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+12V, V _{GS} =0V			100	nA
	Reverse		V _{GS} =-12V, V _{GS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.5	V
Static Drain-Source On-State Resistance (Note 2)		R _{DS(ON)}	V _{GS} =4.5V, I _D =1.5A			240	mΩ
			V _{GS} =4.0V, I _D =1.5A			250	mΩ
			V _{GS} =2.5V, I _D =1.5A			340	mΩ
			DYNAMIC PARAMETERS				
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-10V, f=1.0MHz		90		pF
Output Capacitance		C _{OSS}			20		pF
Reverse Transfer Capacitance		C _{RSS}			13		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 2)		Q _G	V _{DS} =15V, V _{GS} =4.5V, I _D =1.5A (Note 1, 2)		4.5		nC
Gate to Source Charge		Q _{GS}			0.7		nC
Gate to Drain Charge		Q _{GD}			0.75		nC
Turn-ON Delay Time (Note 2)		t _{D(ON)}	V _{DS} =15V, V _{GS} =4.5V, I _D =0.75A, R _G =10Ω (Note 1, 2)		2		ns
Rise Time		t _R			17		ns
Turn-OFF Delay Time		t _{D(OFF)}			13		ns
Fall-Time		t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage(Note 2)		V _{SD}	I _S =0.6A, V _{GS} =0V			1.2	V

■ ELECTRICAL CHARACTERISTICS (Cont.)

P-Channel

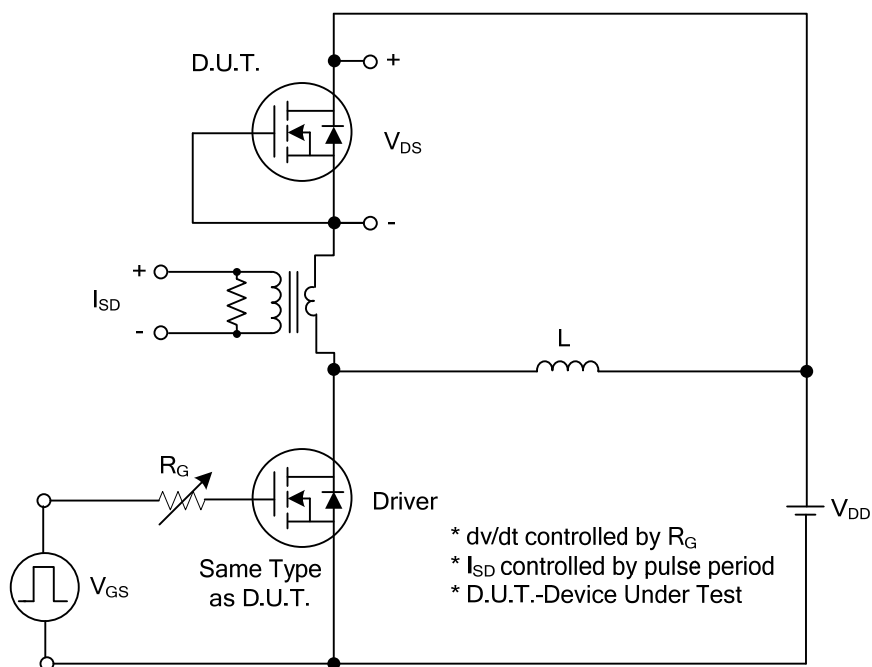
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =-250μA, V _{GS} =0V	-20			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+12V, V _{GS} =0V			100	nA
	Reverse		V _{GS} =-12V, V _{GS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-0.7		-2.0	V
Static Drain-Source On-State Resistance (Note 2)		R _{DS(ON)}	V _{GS} =-4.5V, I _D =-1.0A			390	mΩ
			V _{GS} =-4.0V, I _D =-1.0A			430	mΩ
			V _{GS} =-2.5V, I _D =-0.5A			800	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		130		pF
Output Capacitance		C _{OSS}			32		pF
Reverse Transfer Capacitance		C _{RSS}			24		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 2)		Q _G	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-1.0A (Note 1, 2)		8.5		nC
Gate to Source Charge		Q _{GS}			1		nC
Gate to Drain Charge		Q _{GD}			0.6		nC
Turn-ON Delay Time (Note 2)		t _{D(ON)}	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-0.75A, R _G =10Ω (Note 1, 2)		3		ns
Rise Time		t _R			17.5		ns
Turn-OFF Delay Time		t _{D(OFF)}			29		ns
Fall-Time		t _F			25		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage(Note 2)		V _{SD}	I _S =-0.4A, V _{GS} =0V			-1.2	V

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

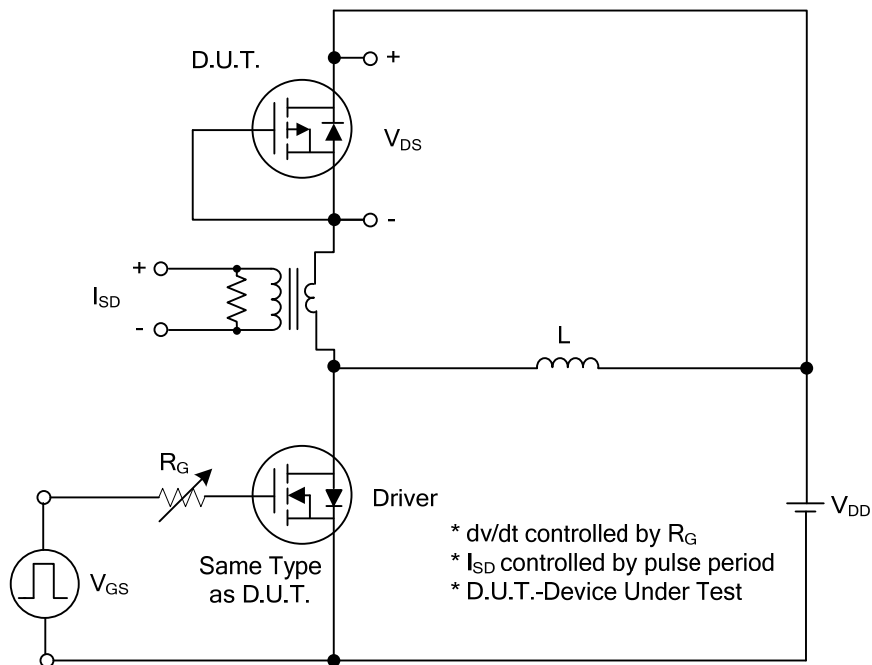
2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

N-CHANNEL

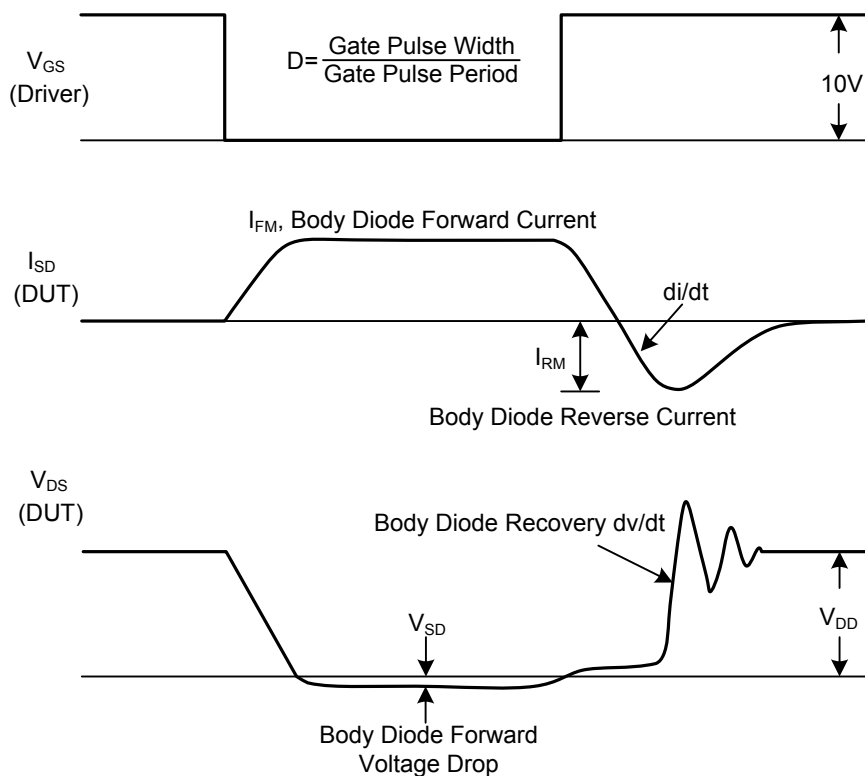


P-CHANNEL



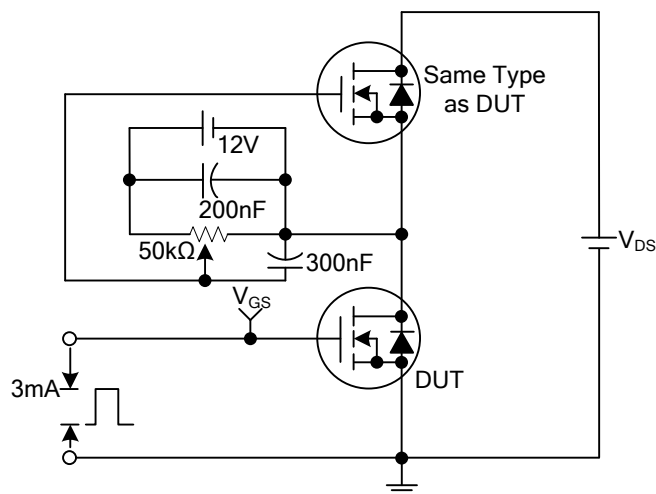
Peak Diode Recovery dv/dt Test Circuit

■ TEST CIRCUITS AND WAVEFORMS

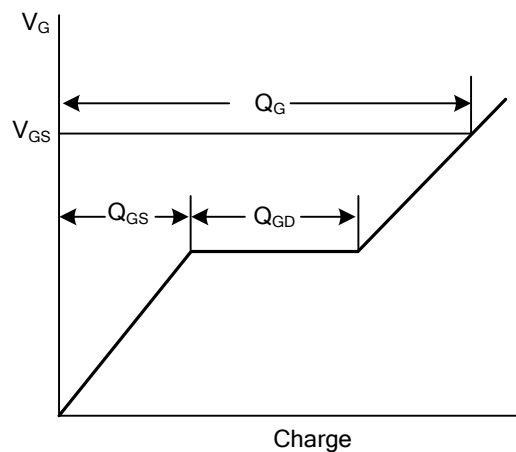
Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS

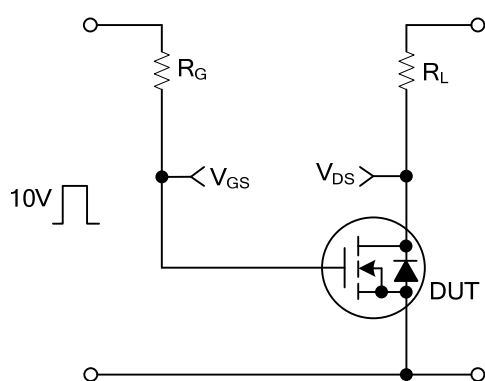
N-CHANNEL



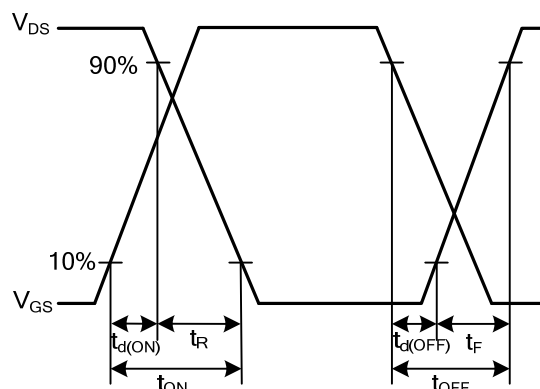
Gate Charge Test Circuit



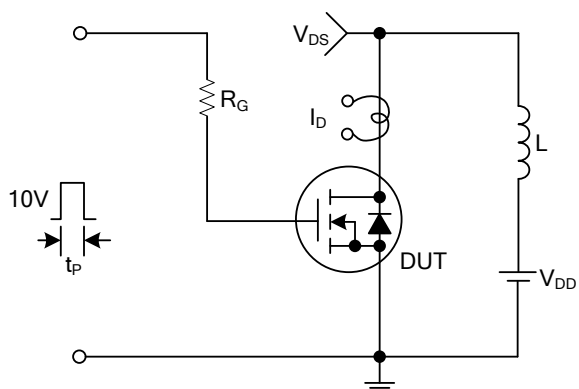
Gate Charge Waveforms



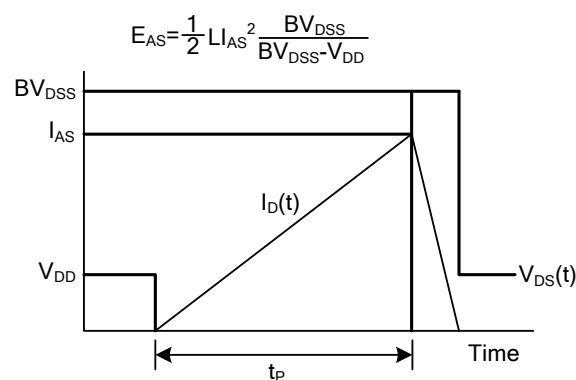
Resistive Switching Test Circuit



Resistive Switching Waveforms



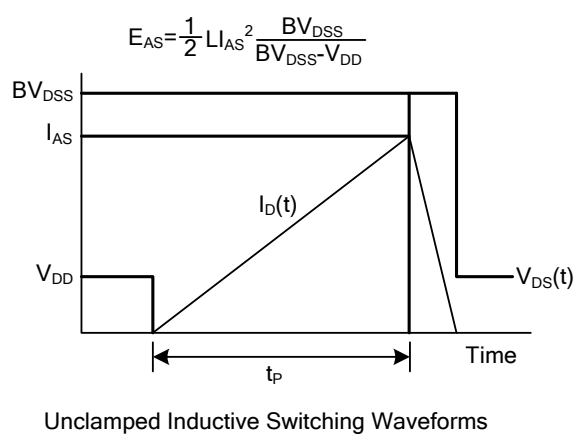
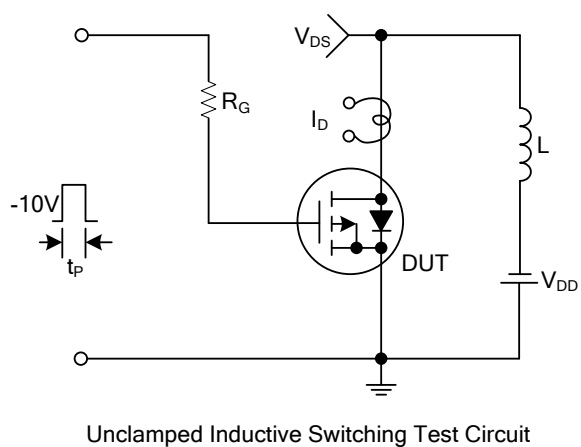
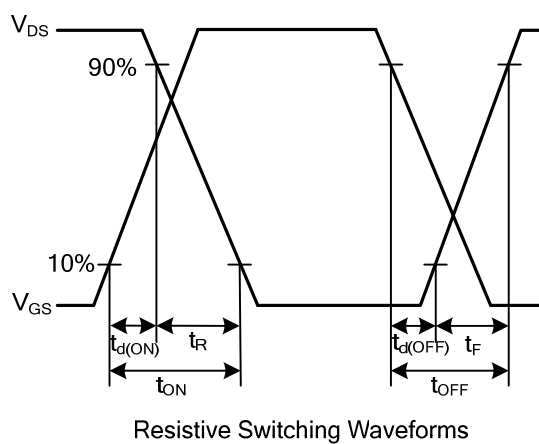
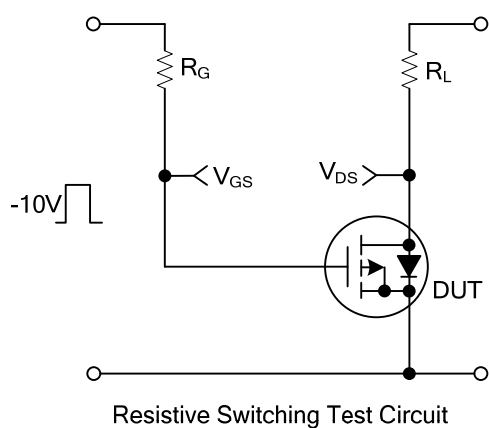
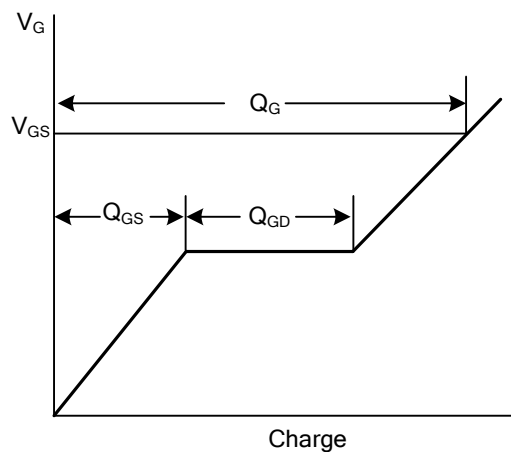
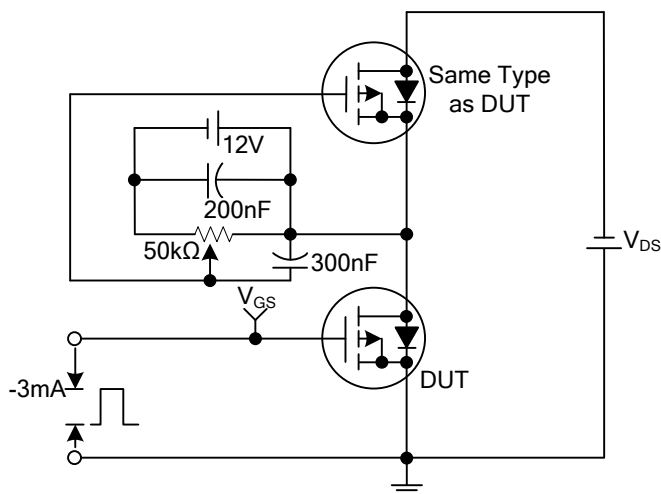
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)

P-CHANNEL



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