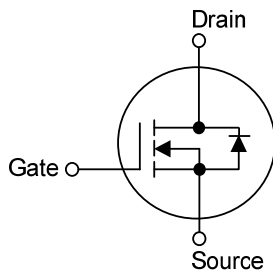


**05N30****Power MOSFET****0.5A, 300V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **05N30** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and superior switching performance.

FEATURES

- * $R_{DS(ON)} \leq 5.0\Omega$ @ $V_{GS}=10V$, $I_D=0.25A$
- * High switching speed
- * 100% avalanche tested

SYMBOL**ORDERING INFORMATION**

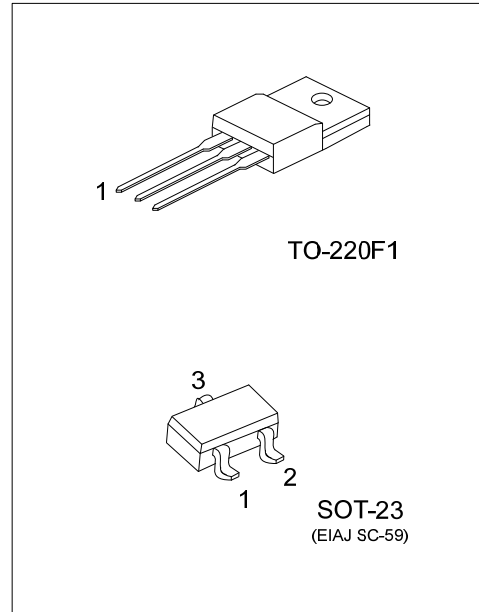
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
05N30L-AE3-R	05N30G-AE3-R	SOT-23	G	S	D	Tape Reel
05N30L-TF1-T	05N30G-TF1-T	TO-220F1	G	D	S	Tube

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

05N30G-AE3-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel, T: Tube (2) AE3: SOT-23, TF1: TO-220F1 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-23	TO-220F1



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	300	V
Gate-Source Voltage		V _{GSS}	±30	V
Continuous Drain Current		I _D	0.5	A
Pulsed Drain Current (Note 2)		I _{DM}	2.0	A
Power Dissipation	SOT-23	P _D	0.3	W
	TO-220F1		7	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.

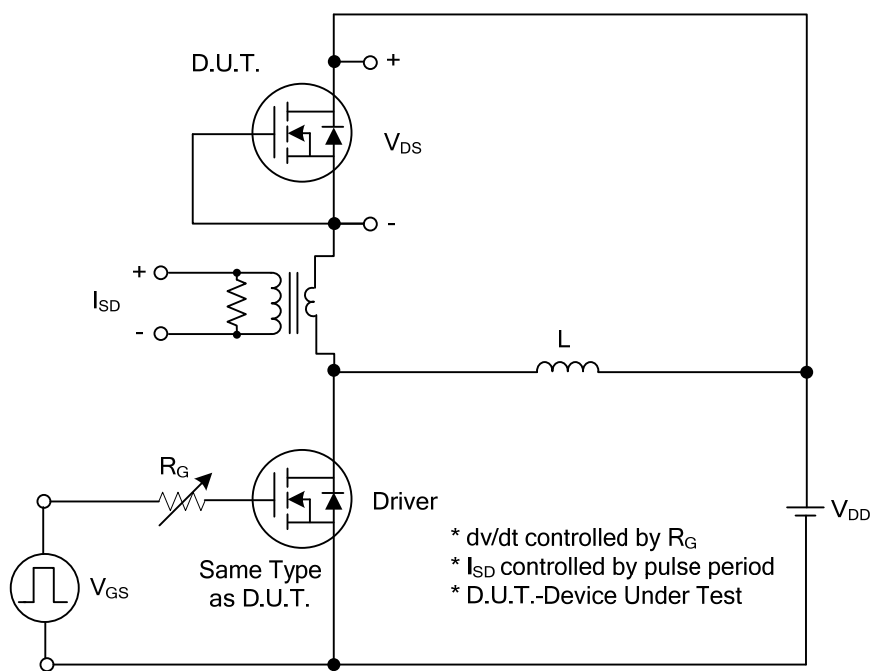
■ **ELECTRICAL CHARACTERISTICS** ($T_J = 25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{DS} =0V	300			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =300V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+30V, V _{DS} =0V			100	nA
	Reverse		V _{GS} =-30V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =0.25A			5.0	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		145		pF
Output Capacitance		C _{OSS}			23.2		pF
Reverse Transfer Capacitance		C _{RSS}			4.7		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =240V, V _{GS} =10V, I _D =0.5A I _G = 100μA (Note1, 2)		9.2		nC
Gate to Source Charge		Q _{GS}			1.5		nC
Gate to Drain Charge		Q _{GD}			0.62		nC
Turn-ON Delay Time (Note 1)		t _{D(ON)}	V _{DS} =150V, V _{GS} =10V, I _D =0.5A, R _G =25Ω (Note1, 2)		2		ns
Rise Time		t _R			4		ns
Turn-OFF Delay Time		t _{D(OFF)}			7		ns
Fall-Time		t _F			45		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				0.5	A
Maximum Body-Diode Pulsed Current		I _{SM}				2.0	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =0.5A, V _{GS} =0V			1.4	V

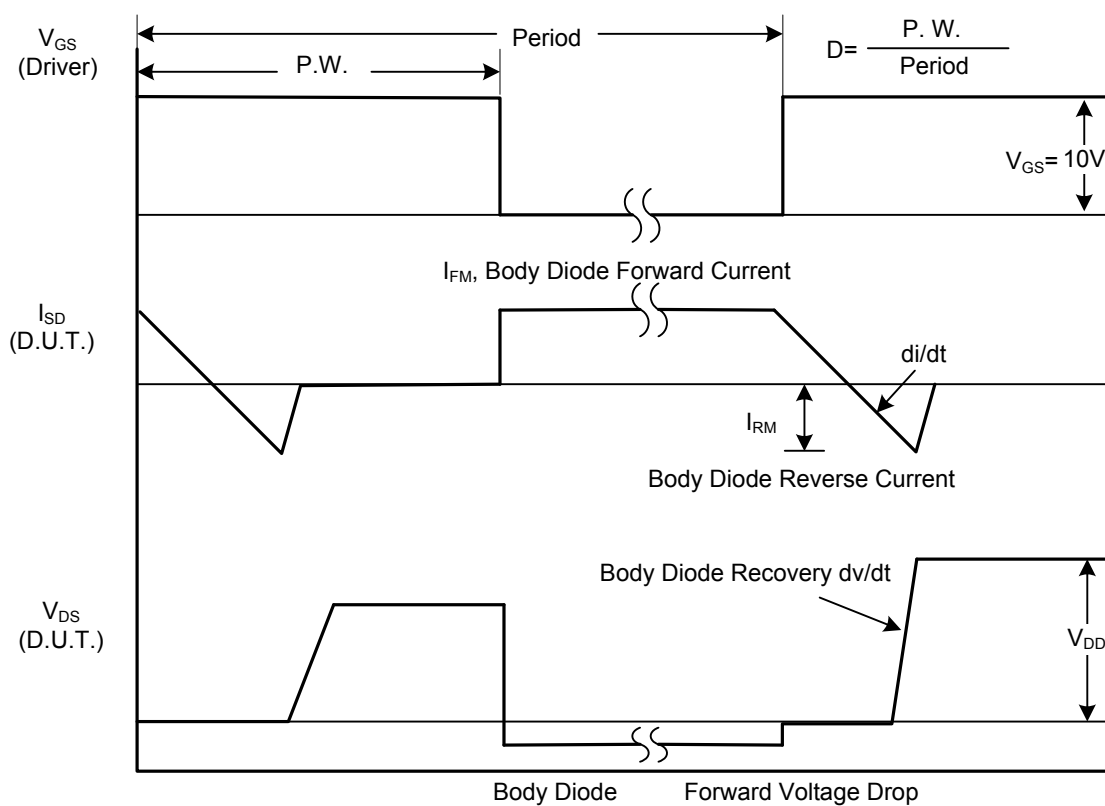
Notes: 1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

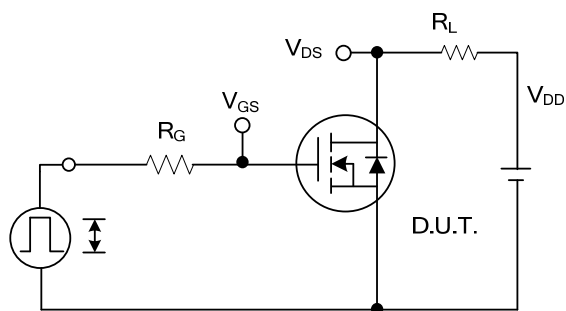


Peak Diode Recovery dv/dt Test Circuit

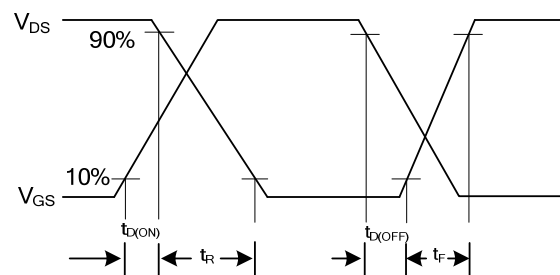


Peak Diode Recovery dv/dt Waveforms

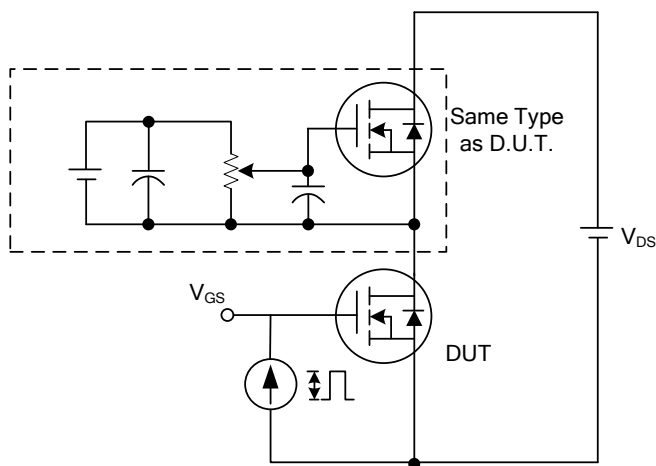
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



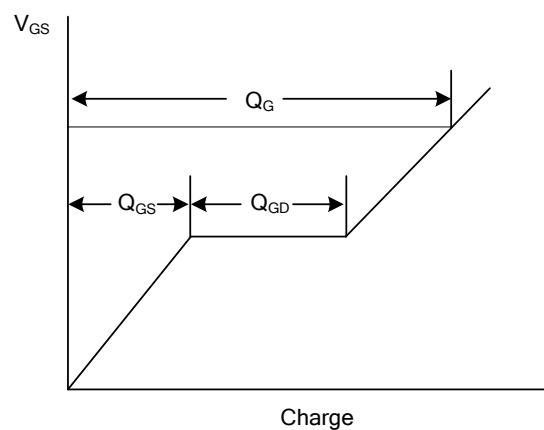
Switching Test Circuit



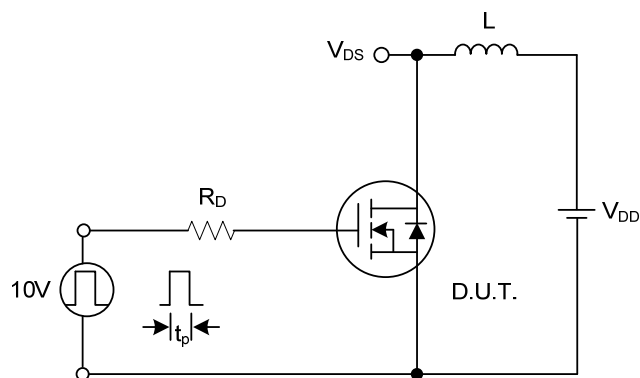
Switching Waveforms



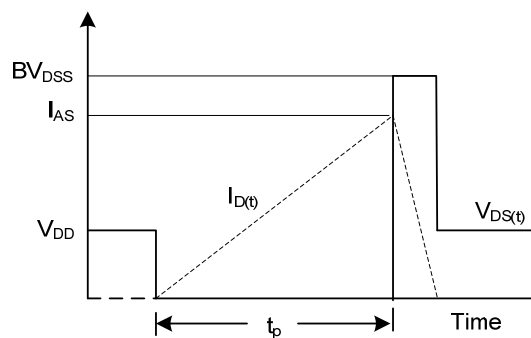
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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