

**UT65N25H**

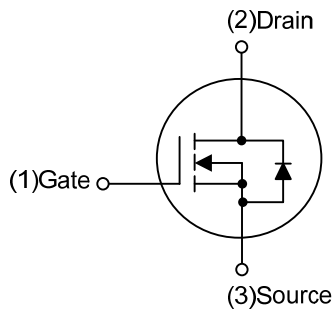
Preliminary

Power MOSFET**65A, 250V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UT65N25H** is a N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

FEATURES

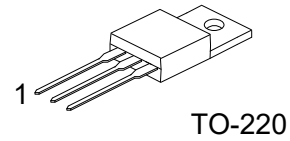
- * $R_{DS(ON)} \leq 32 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=32.5\text{A}$
- * Improved dv/dt capability
- * High Switching Speed
- * Fast switching

SYMBOL**ORDERING INFORMATION**

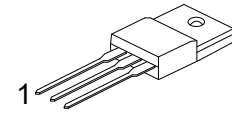
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT65N25HL-TA3-T	UT65N25HG-TA3-T	TO-220	G	D	S	Tube
UT65N25HL-TF1-T	UT65N25HG-TF1-T	TO-220F1	G	D	S	Tube
UT65N25HL-TF2-T	UT65N25HG-TF2-T	TO-220F2	G	D	S	Tube

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

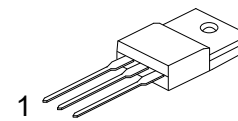
UT65N25HG-TA3-T		(1)Packing Type	(1) T: Tube
		(2)Package Type	(2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



TO-220

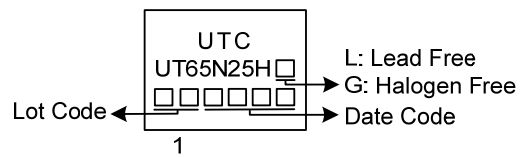


TO-220F1



TO-220F2

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous ($V_{GS}=10\text{V}$)	I_D	65	A
	Pulsed (Note 2)	I_{DM}	130	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	169	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	6	V/ns
Power Dissipation	TO-220	P_D	255	W
	TO-220F1/TO-220F2		49	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.

3. $L = 1\text{mH}$, $I_{AS} = 18.4\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DS}$, Starting $T_J = 25^{\circ}\text{C}$

■ **THERMAL DATA**

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	$^{\circ}\text{C/W}$
Junction to Case	TO-220	θ_{JC}	0.49	$^{\circ}\text{C/W}$
	TO-220F1/TO-220F2		2.55	$^{\circ}\text{C/W}$

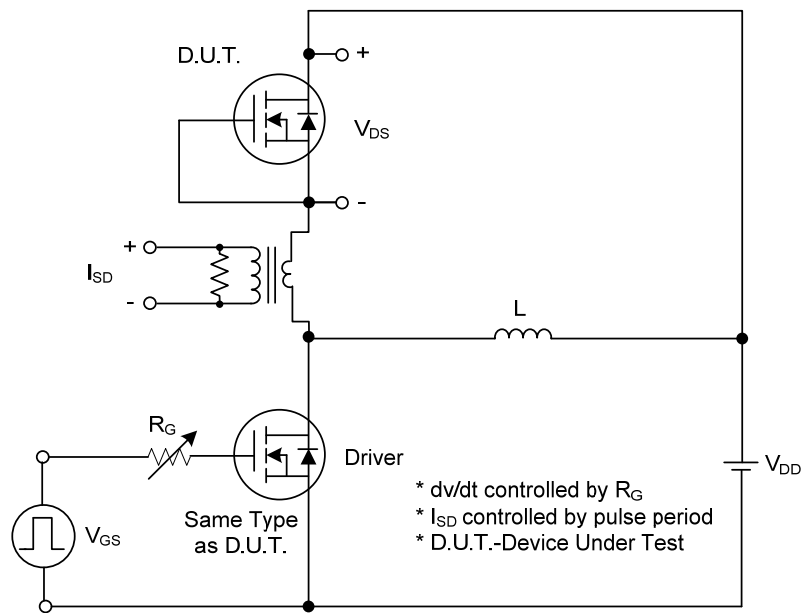
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	250			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =250V, V _{GS} =0V			10	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =32.5A			32	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		17		nF
Output Capacitance		C _{OSS}			512		pF
Reverse Transfer Capacitance		C _{RSS}			424		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =200V, V _{GS} =10V, I _D =65A (Note 2)		396		nC
Gate to Source Charge		Q _{GS}			80		nC
Gate to Drain Charge		Q _{GD}			199		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =100V, V _{GS} =10V, I _D =65A, R _G =3Ω, (Note 2)		57		ns
Rise Time		t _R			37		ns
Turn-OFF Delay Time		t _{D(OFF)}			149		ns
Fall-Time		t _F			63		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				65	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				130	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =65A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time		t _{rr}	I _F =30A, V _{GS} =0V, di/dt=100A/μs		238		ns
Body Diode Reverse Recovery Charge		Q _{rr}			2.201		μC

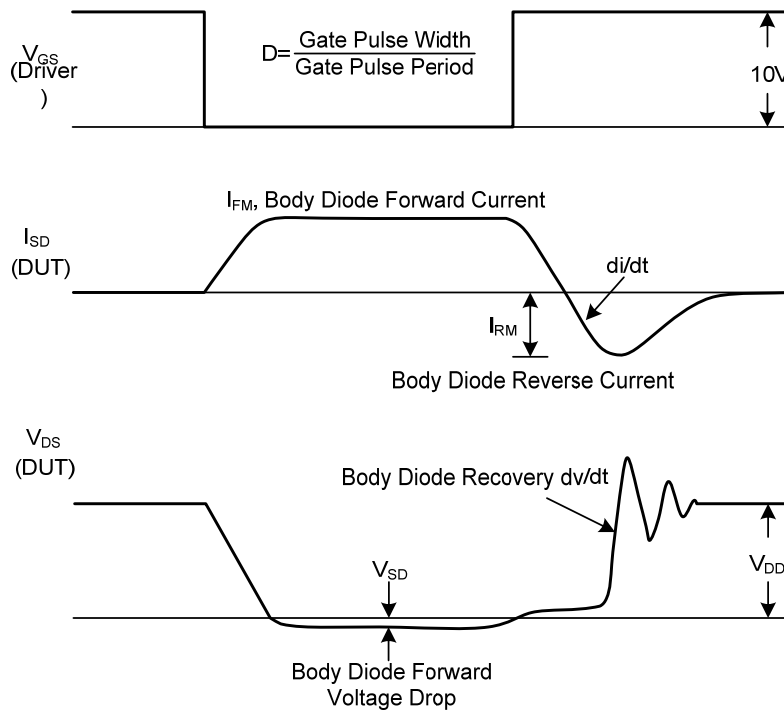
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

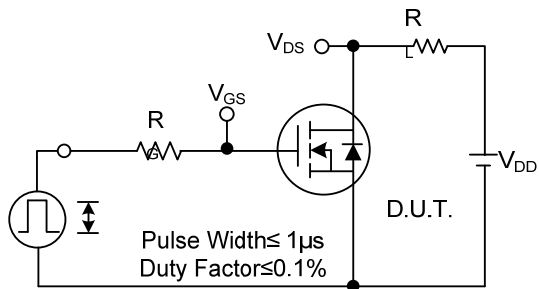


Peak Diode Recovery dv/dt Test Circuit

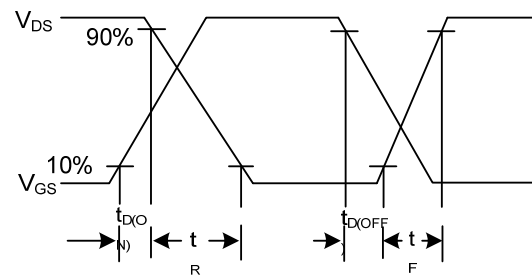


Peak Diode Recovery dv/dt Waveforms

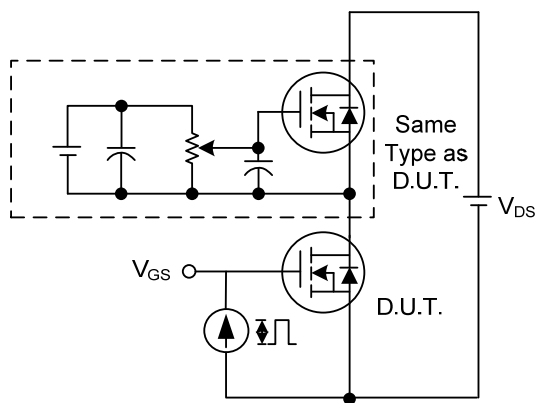
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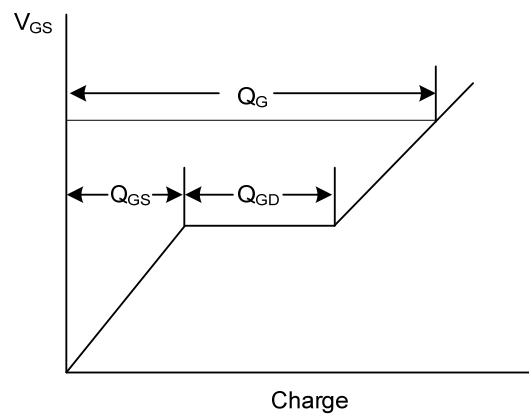
Switching Test Circuit



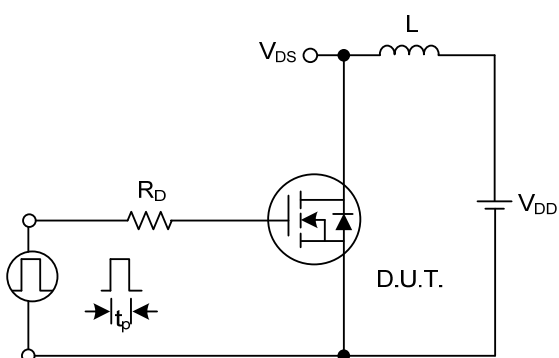
Switching Waveforms



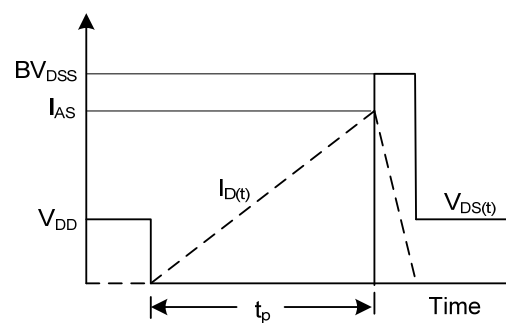
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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