



30N20

Power MOSFET

30A, 200V N-CHANNEL POWER MOSFET

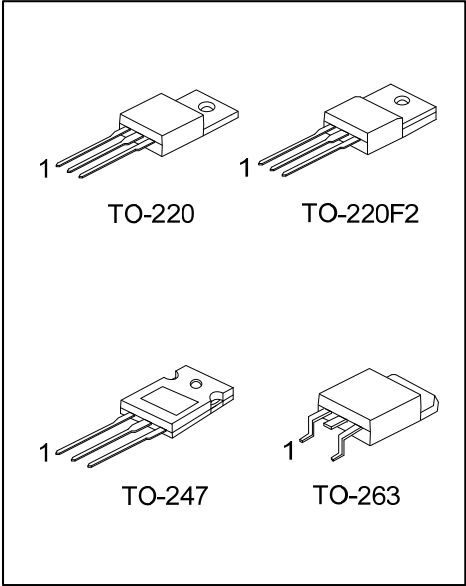
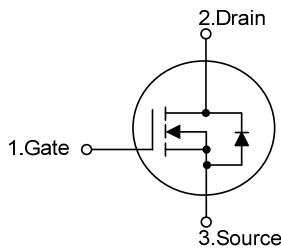
■ DESCRIPTION

The UTC **30N20** is an N-channel mode Power FET, it uses UTC's advanced technology. This technology allows a minimum on-state resistance, superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

■ FEATURES

- * $R_{DS(ON)} < 75m\Omega @ V_{GS}=10V, I_D=15A$
- * Low Gate Charge (Typical 60nC)
- * High Switching Speed

■ SYMBOL



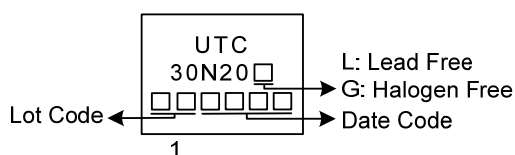
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
30N20L-TA3-T	30N20G-TF2-T	TO-220	G	D	S	Tube
30N20L-TF2-T	30N20G-TF2-T	TO-220F2	G	D	S	Tube
30N20L-T47-T	30N20G-T47-T	TO-247	G	D	S	Tube
30N20L-TQ2-T	30N20G-TQ2-T	TO-263	G	D	S	Tube
30N20L-TQ2-R	30N20G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>30N20G-TF2-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF2: TO-220F2, T47: TO-247 TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	200	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	Continuous	I_D	30	A
	Pulsed	I_{DM}	90	A
Avalanche Energy		E_{AS}	640	mJ
Power Dissipation	TO-220/TO-263	P_D	140	W
	TO-220F2		40	W
	TO-247		214	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note: 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.

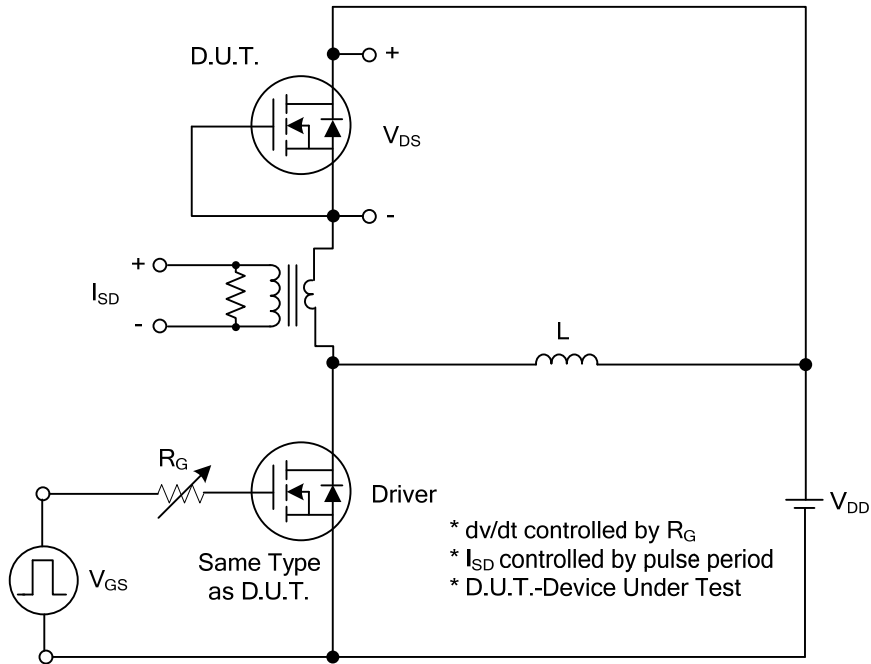
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F2	θ_{JA}	62.5	$^{\circ}\text{C/W}$
	TO-263			
	TO-247			
Junction to Case	TO-220/TO-263	θ_{JC}	0.89	$^{\circ}\text{C/W}$
	TO-220F2		3.125	$^{\circ}\text{C/W}$
	TO-247		0.58	$^{\circ}\text{C/W}$

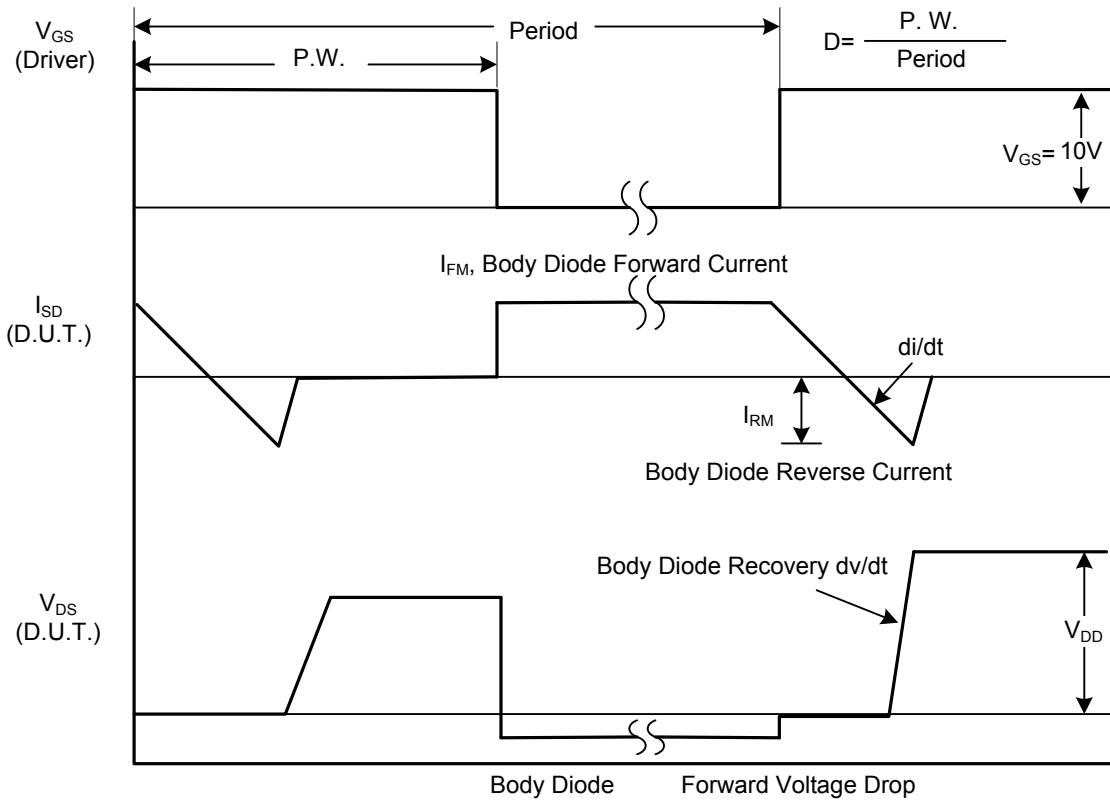
■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	200			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=200\text{V}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+30\text{V}, V_{DS}=0\text{V}$			+100	nA
	Reverse		$V_{GS}=-30\text{V}, V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$I_D=250\mu\text{A}$	1.5		3.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=15\text{A}$			75	m Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$		2400	3100	pF
Output Capacitance		C_{OSS}			430	560	pF
Reverse Transfer Capacitance		C_{RSS}			55	70	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	$V_{DD}=50\text{V}, V_{GS}=10\text{V}, I_D=1.3\text{A}$		60	78	nC
Gate to Source Charge		Q_{GS}			17		nC
Gate to Drain Charge		Q_{GD}			27		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=30\text{V}, I_D=0.5\text{A}, R_G=25\Omega, V_{GS}=0\sim 10\text{V}$		40		ns
Rise Time		t_R			280		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			125		ns
Fall-Time		t_F			115		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				30	A
Maximum Body-Diode Pulsed Current		I_{SM}				90	A
Drain-Source Diode Forward Voltage		V_{SD}	$I_S=30\text{A}, V_{GS}=0\text{V}$			1.5	V

■ TEST CIRCUITS AND WAVEFORMS

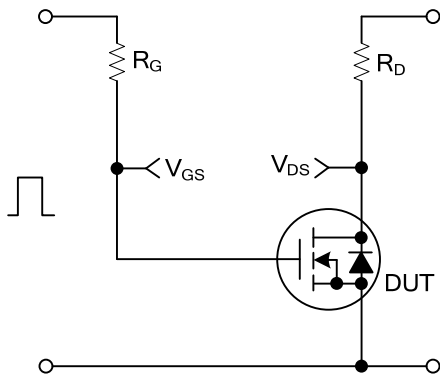


Peak Diode Recovery dv/dt Test Circuit

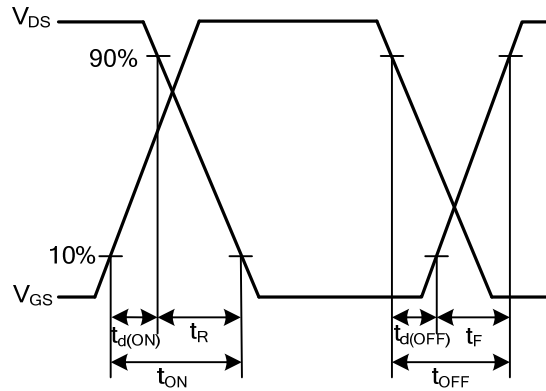


Peak Diode Recovery dv/dt Waveforms

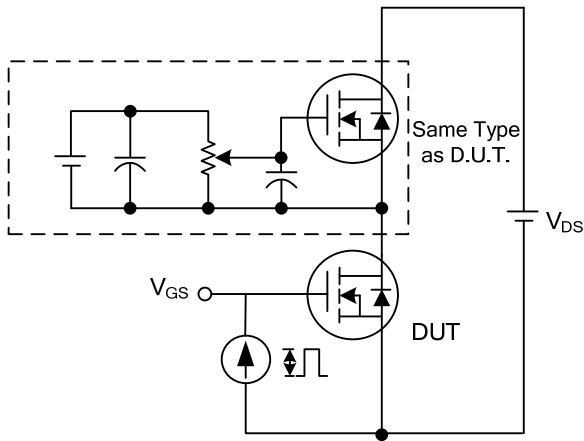
TEST CIRCUITS AND WAVEFORMS



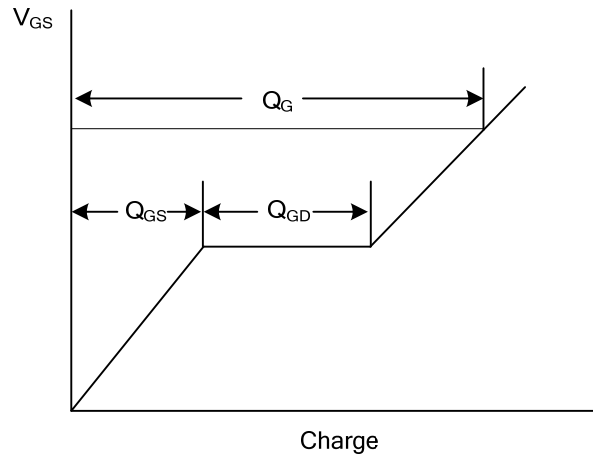
Switching Test Circuit



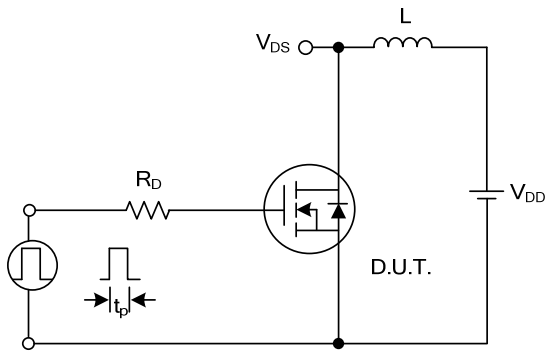
Switching Waveforms



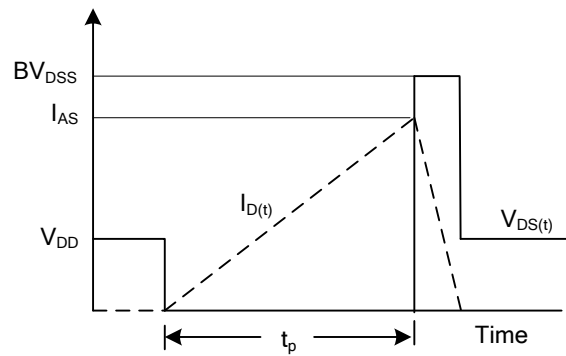
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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