

UNISONIC TECHNOLOGIES CO., LTD

20N15V Preliminary Power MOSFET

20A, 150V N-CHANNEL POWER MOSFET

■ DESCRIPTION

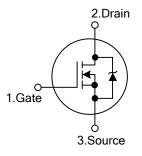
The UTC **20N15V** is an N-Channel POWER MOSFET, it uses UTC's advanced technology to provide customers with high switching speed and low gate charge.

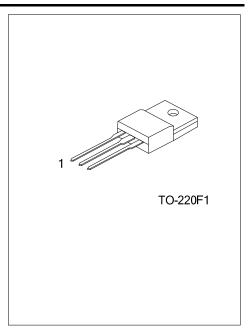
The UTC **20N15V** is suitable for bridge circuits, power converters and PWM motor controls.

■ FEATURES

- * $R_{DS(on)}$ <0.13 Ω @ V_{GS} =10V, I_{D} =10A
- * High switching speed
- * Low gate charge

■ SYMBOL





■ ORDERING INFORMATION

Note: Pin Assignment: G: Gate

Ordering Number		Davis	Pin	Daaldaa			
Lead Free	Halogen Free	Package	1	2	3	Packing	
20N15VL-TF1-T	20N15VLG-TF1-T	TO-220F1	G	D	S	Tube	

S: Source

D: Drain

20N15VL-TF1-T
(1)Packing Type
(2)Package Type
(3)Lead Free
(3) L: Lead Free, G: Halogen Free

■ **ABSOLUTE MAXIMUM RATINGS** (T_C=25°C, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	150	V	
Gate-Source Voltage	Continuous	V_{GSS}	±20	V	
Drain Current	Continuous	I _D	20	Α	
	Single Pulsed (tp≤10µs)	I _{DM}	60	Α	
Single Drain-to-Source Avalanche Energy	Starting $T_J=25^{\circ}C$ ($V_{DD}=120V$, $V_{GS}=10V$, $I_L=20A$, $L=0.3mH$)	E _{AS}	60	mJ	
Power Dissipation		D	50	W	
Derate above 25°C		P _D	0.4	W/°C	
Operating Temperature		T_J	+150	°C	
Storage Temperature Range		T _{STG}	-55~+150	°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 CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	θ_{JA}	62.5	°C/W	
Junction to Case	θ_{JC}	2.5	°C/W	

■ **ELECTRICAL CHARACTERISTICS** (T_J=25°C, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I _D =0.25mA, V _{GS} =0V 150				V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =150V, V _{GS} =0V			10	μΑ
			V _{DS} =150V, V _{GS} =0V, T _J =125°C			100	μΑ
Gate-Source Leakage Current	Forward		V _{GS} =+20V, V _{DS} =0V			100	nA
	Reverse	I_{GSS}	V _{GS} =-20V, V _{DS} =0V			100	nA
ON CHARACTERISTICS (Note 1)							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=0.25$ mA	1.0		2.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V _{GS} =10V, I _D =10A		0.12	0.13	Ω
Drain-Source On-Voltage		V _{DS(ON)}	V _{GS} =10V, I _D =20A			2.8	٧
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}			1133	1627	pF
Output Capacitance		Coss	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		332	474	pF
Reverse Transfer Capacitance		C _{RSS}			105	174	pF
SWITCHING PARAMETERS (N	lote 2)				a.		
	_	Q_{G}			39.1	55.9	nC
Gate Charge		Q_{GS}	V_{GS} =10V, V_{DS} =75V, I_{D} =20A		7.5		nC
		Q_GD	<u> </u>		22		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD} =75V, V_{GS} =10V, I_{D} =20A, R_{G} =9.1 Ω		11	25	ns
Rise Time		t_R			77	153	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			33	67	ns
Fall-Time		t _F			49	97	ns
SOURCE- DRAIN DIODE RATI	NGS AND	CHARACTE	RISTICS				
Drain-Source Diode Forward Voltage		V_{SD}	I _S =20A, V _{GS} =0V			1.5	V
(Note 1)		⋄ 2⊓				1.5	٧
Maximum Continuous Drain-Source Diode		Is				20	Α
Forward Current							
Pulsed Drain-Source Current		I _{SM}				60	Α
Body Diode Reverse Recovery Time		t _{RR}	I _S =20A, V _{GS} =0V, dI _S /dt=100A/μs		160		ns
Body Diode Reverse Recovery Charge		Q_{RR}			1.1		μC

Notes: 1. Pulse Test: Pulse Width≤300µs, Duty Cycle≤2%.

^{2.} Switching characteristics are independent of operating junction temperature.

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