

UNISONIC TECHNOLOGIES CO., LTD

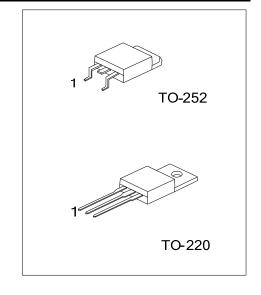
12N25 **Power MOSFET**

12A, 250V N-CHANNEL POWER MOSFET

DESCRIPTION

The UTC 12N25 is an N-channel mode power MOSFET using UTC's advanced technology to provide customers with planar stripe and DMOS technology. This technology specializes in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

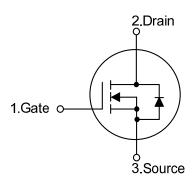
The UTC 12N25 is universally applied in electronic lamp ballast based on half bridge topology and high efficient switched mode power supply.



FEATURES

- * I_D=12A
- * $V_{DS} = 250V$
- * $R_{DS(ON)}$ =0.34 Ω @ V_{GS} =10V
- * High switching speed
- * 100% avalanche tested

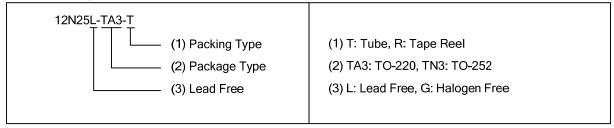
SYMBOL



ORDERING INFORMATION

Ordering Number		Doolsone	Pin Assignment			Doolsing	
Lead Free	Halogen Free	Package 1		2	3	Packing	
12N25L-TA3-T	12N25G-TA3-T	TO-220	G	D	S	Tube	
12N25L-TN3-T	12N25G-TN3-T	TO-252	G	D	S	Tube	
12N25L-TN3-R	12N25G-TN3-R	TO-252	G	D	S	Tape Reel	

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



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	250	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous (T _C =25°C)	I _D	12	Α
	Pulsed (Note 2)	I_{DM}	48	Α
Single Pulsed Avalanche Energy		E _{AS}	474	mJ
Danier Diagination	TO-220	Б	73	W
Power Dissipation	TO-252	P_{D}	30	W
Junction Temperature		T_J	+150	°C
Storage Temperature Range		T_{STG}	-55~+150	°C

Note: 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
lunation to Ambiant	TO-220	0	62.5	°C/W
Junction to Ambient	TO-252	θ_{JA}	100	°C/W
lunation to Cons	TO-220	θјс	1.7	°C/W
Junction to Case	TO-252		4.1	°C/W

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

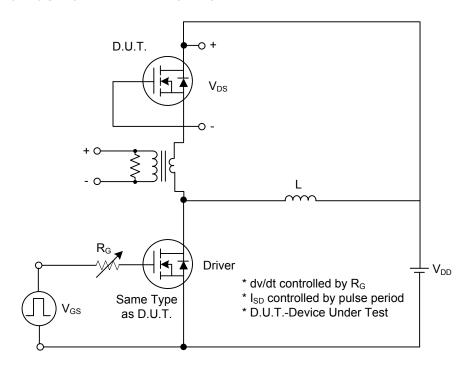
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TVD	MAX	LINIT	
OFF CHARACTERISTICS		STIVIBUL	TEST CONDITIONS	IVIIIN	IIF	IVIAA	UNIT	
		5) (I. 050 A M 0M	050			.,	
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	250			V	
Drain-Source Leakage Current		I_{DSS}	V _{DS} =250V, V _{GS} =0V			1	μΑ	
Gate- Source Leakage Current	Forward	- loss	V _{GS} =+20V, V _{DS} =0V			+100	nA	
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_{D}=250\mu A$ 2.0			4.0	V	
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =12A		0.34	0.5	Ω	
DYNAMIC PARAMETERS								
Input Capacitance		C _{ISS}				3000	рF	
Output Capacitance		Coss	V _{GS} =0V, V _{DS} =25V, f=1.0MHz			900	pF	
Reverse Transfer Capacitance		C _{RSS}				400	рF	
SWITCHING PARAMETERS								
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =200V, I _D =12A, R _G =25Ω (Note 1, 2)		14	50	ns	
Rise Time		t _R			80	150	ns	
Turn-OFF Delay Time		t _{D(OFF)}			90	200	ns	
Fall-Time		t_{F}			80	170	ns	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Drain-Source Diode Forward Voltage		V_{SD}	I _S =12A, V _{GS} =0V			1.4	V	
Maximum Body-Diode Continuous Current		Is				12	Α	
Maximum Body-Diode Pulsed Current		I _{SM}				48	Α	

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

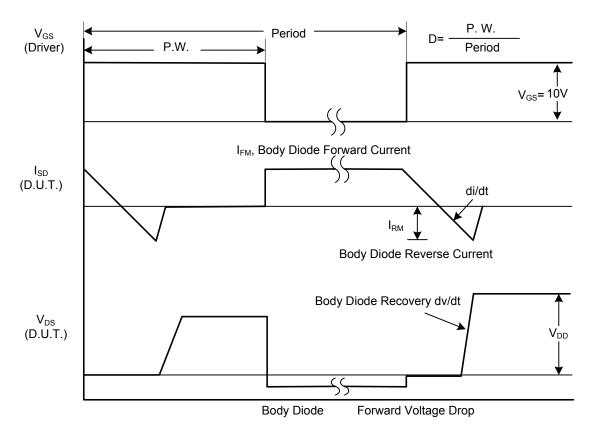
^{2.} Repetitive Rating: Pulse width limited by maximum junction temperature

^{2.} Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS



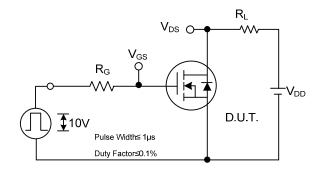
Peak Diode Recovery dv/dt Test Circuit

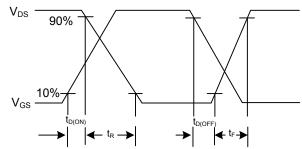


Peak Diode Recovery dv/dt Waveforms

12N25

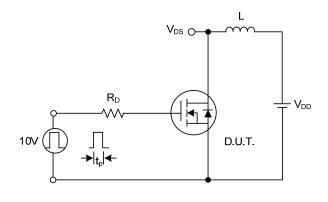
■ TEST CIRCUITS AND WAVEFORMS (Cont.)

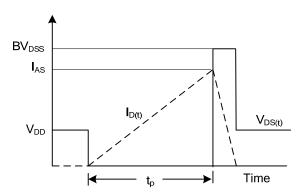




Switching Test Circuit

Switching Waveforms

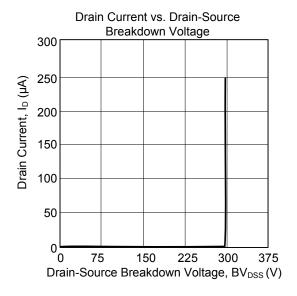


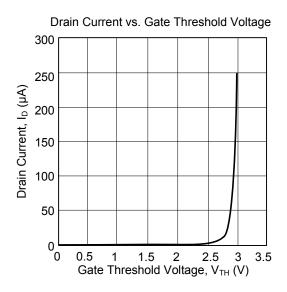


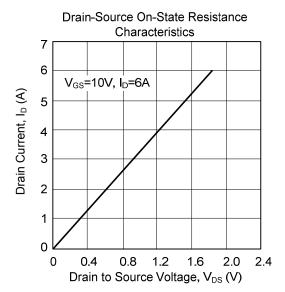
Unclamped Inductive Switching Test Circuit

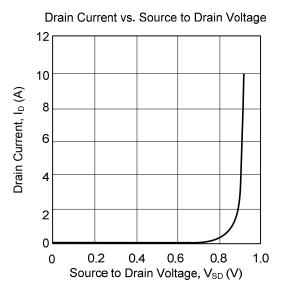
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS









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