

UNISONIC TECHNOLOGIES CO., LTD

12N25V

12A, 250V N-CHANNEL POWER MOSFET

DESCRIPTION

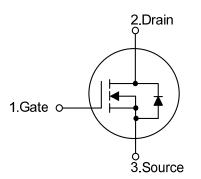
The UTC **12N25V** is a n N-c hannel mode power MOSF ET using UTC's advanced technology to provide customers with planar stripe and DMOS te chnology. T his technology s pecializes in allowing a minimum on-state resistance and superior switching performance. It also can withstand hig h e nergy pulse in the avala nche and commutation mode.

The UTC **12N25V** is universally applied in electronic lamp ballast based on ha lf brid ge to pology and h igh efficient s witched mo de power supply.

FEATURES

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

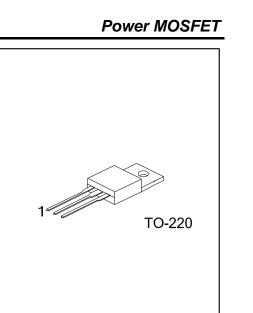
SYMBOL



ORDERING INFORMATION

Ordering Number				Deelvere	Pin Assignment			Decking
Lead	ree	Halogen Free		Package	1	2	3	Packing
12N25VL	-TA3-T	12N25VG-TA3-T		TO-220	G	D	S	Tube
Note: Pin Assignment: G: Gate D: Drain S: Source								
12N25VL-TA3-T			(1)	T. Tube				

(1) Packing Type	(1) T: Tube
(2) Package Type	(2) TA3: TO-220
(3) Lead Free	(3) L: Lead Free, G: Halogen Free



■ ABSOLUTE MAXIMUM RATINGS (Tc=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		А
	Pulsed (Note 2)	I _{DM}	48	А
Single Pulsed Avalanche	ingle Pulsed Avalanche Energy		474	mJ
Power Dissipation		_	192 W	
Derate above 25°C		PD	1.53	W/°C
Junction Temperature		TJ	+150	°C
Storage Temperature Range		T _{STG}	-55~+150	С°

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.

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

THERMAL DATA

PARAMETER SYMBOL		RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	0.65	°C/W

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltag	е	BV _{DSS} I	_D =250µA, V _{GS} =0V 250				V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =250V, V _{GS} =0V			1	μA
Cata Cauraa Laakana Cumant	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
Gate- Source Leakage Current	Reverse V		_{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250µA	1.0		2.5	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}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz			3000	рF
Output Capacitance		Coss				900	рF
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		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 RATII	NGS AND C	CHARACTERI	STICS				
Drain-Source Diode Forward Vol	Itage	V _{SD}	I _S =12A, V _{GS} =0V			1.4	V
Maximum Body-Diode Continuou	us Current	Is				12	А
Maximum Body-Diode Pulsed C	urrent	I _{SM}				48	А
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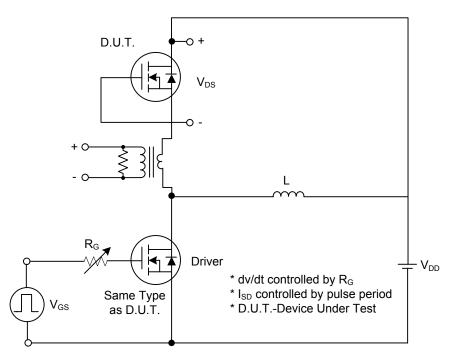
Notes: 1. Pulse Test: Pulse width \leq 300µs, Duty cycle \leq 2%

2. Essentially independent of operating temperature

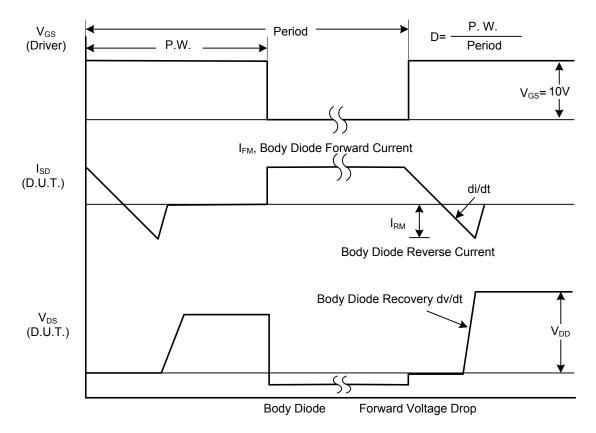


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TEST CIRCUITS AND WAVEFORMS



Peak Diode Recovery dv/dt Test Circuit

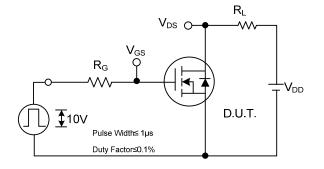


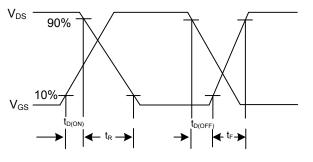




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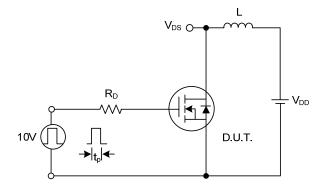
TEST CIRCUITS AND WAVEFORMS (Cont.)



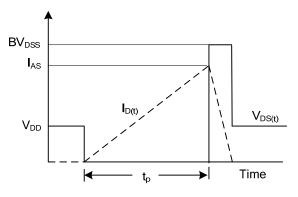


Switching Test Circuit





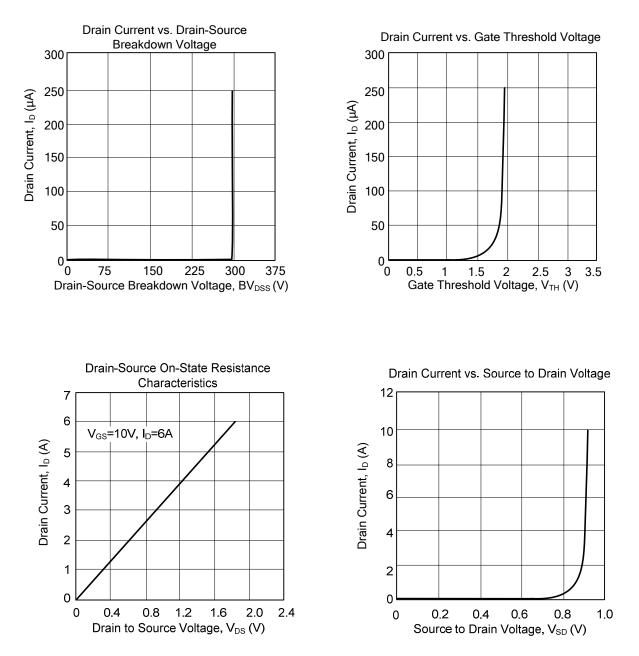
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



TYPICAL CHARACTERISTICS



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