



N-CHANNEL ENHANCEMENT MODE POWER MOSFET

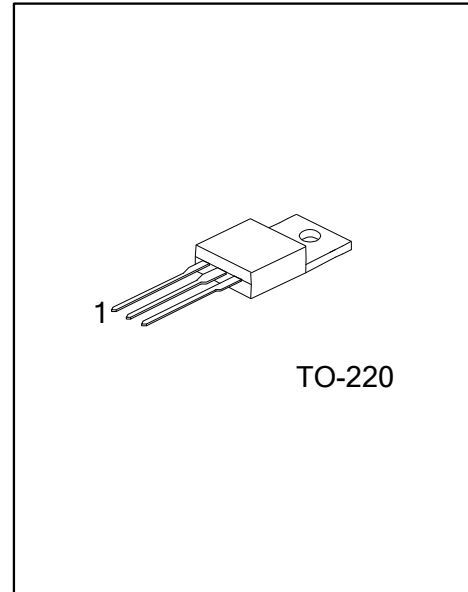
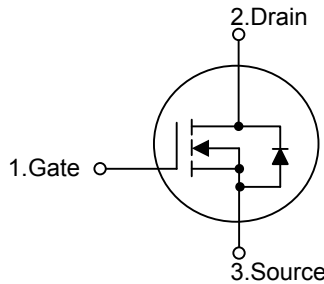
DESCRIPTION

The UTC **UTT3205** uses advanced technology to provide excellent $R_{DS(ON)}$, fast switching, low gate charge, and excellent efficiency. This device is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts.

FEATURES

- * $R_{DS(ON)} < 8 \text{ m}\Omega$ @ $V_{GS} = 10\text{V}$
- * Ultra Low Gate Charge (146nC max)
- * Low Reverse Transfer Capacitance ($C_{RSS} = \text{typ. } 211 \text{ pF}$)
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness

SYMBOL



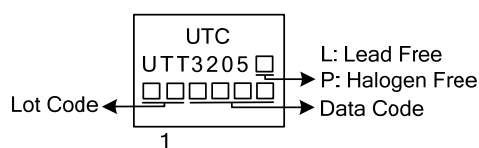
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT3205L-TA3-T	UTT3205G-TA3-T	TO-220	G	D	S	Tube

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

<p>UTT3205L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous (V _{GS} =10V)	I _D	110	A
	Pulsed (Note 2)	I _{DM}	390	
Avalanche Current (Note 2)		I _{AR}	62	A
Avalanche Energy	Repetitive (Note 2)	E _{AR}	20	mJ
	Single Pulsed (Note 3)	E _{AS}	450	
Power Dissipation (T _C =25°C)		P _D	200	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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. Pulse width limited by T_{J(MAX)}

3. T_J=25°C, L=138μH, R_G=25Ω, I_{AS}=62A

■ THERMAL DATA

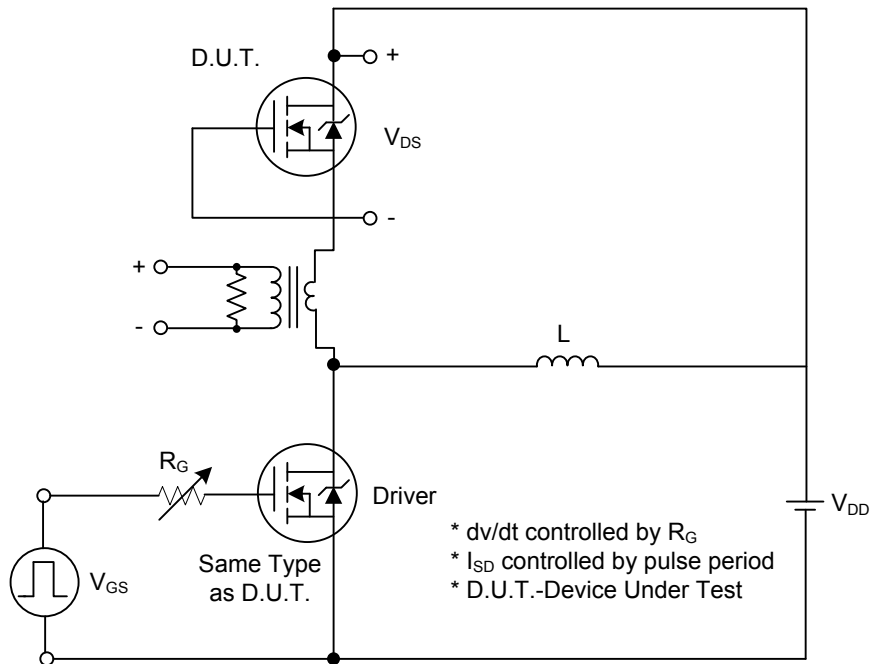
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	62	°C/W
Junction to Case	θ _{JC}	0.75	°C/W

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

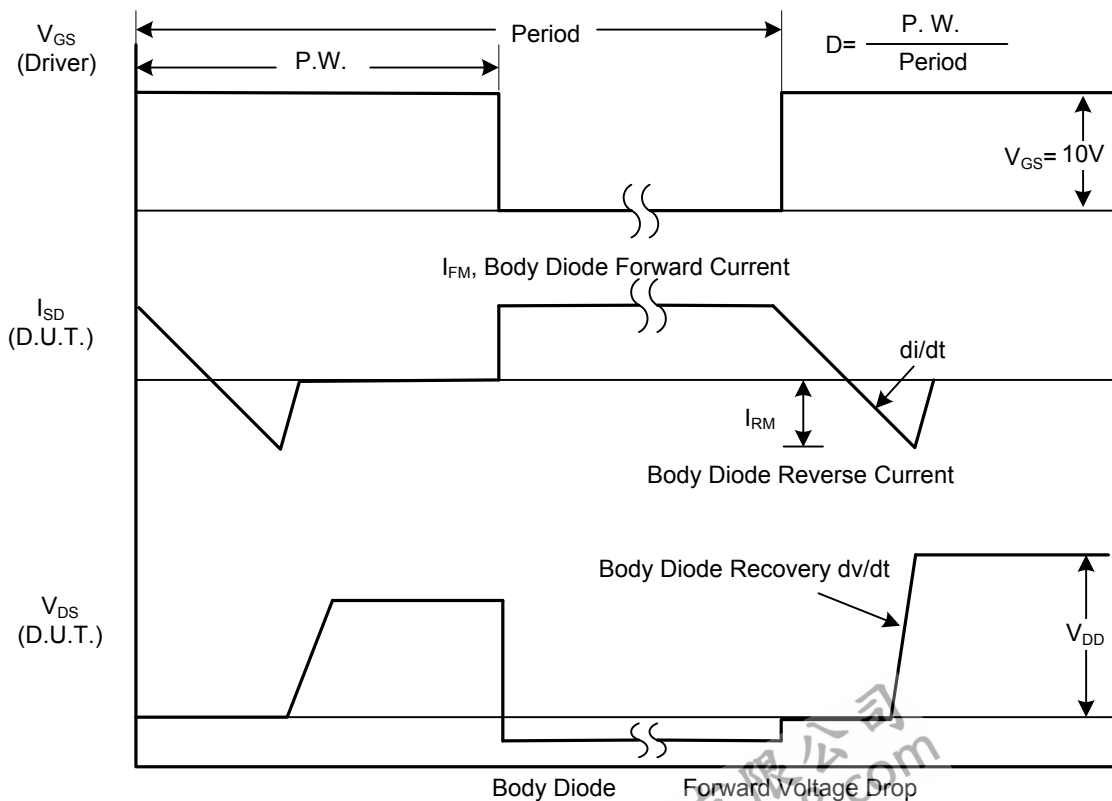
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	55			V	
Drain-Source Leakage Current	I _{DSS}	V _{DS} =55V, V _{GS} =0V			25	μA	
Gate- Source Leakage Current	I _{GSS}	Forward			+100	nA	
		Reverse			-100	nA	
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA		0.057		V/°C	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.4		3.0	V	
Static Drain-Source On-Resistance (Note)	R _{DS(ON)}	V _{GS} =10V, I _D =62A			8	mΩ	
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1MHz		3247		pF	
Output Capacitance	C _{OSS}				781		pF
Reverse Transfer Capacitance	C _{RSS}				211		pF
SWITCHING PARAMETERS							
Total Gate Charge	Q _G	V _{DS} =44V, I _D =62A, V _{GS} =10V			146	nC	
Gate Source Charge	Q _{GS}				35	nC	
Gate Drain Charge	Q _{GD}				54	nC	
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =28V, I _D =62A, R _G =4.5Ω, V _{GS} =10V (Note)		14		ns	
Turn-ON Rise Time	t _R			101		ns	
Turn-OFF Delay Time	t _{D(OFF)}				50		ns
Turn-OFF Fall-Time	t _F				65		ns
Internal Drain Inductance	L _D			4.5		nH	
Internal Source Inductance	L _S			7.5		nH	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Diode Forward Voltage	V _{SD}	I _S =62A, V _{GS} =0V			1.3	V	
Maximum Continuous Drain-Source Diode Forward Current	I _S				110	A	
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				390	A	

Note: Pulse width ≤ 400μs; duty cycle ≤ 2%.

■ TEST CIRCUITS AND WAVEFORMS

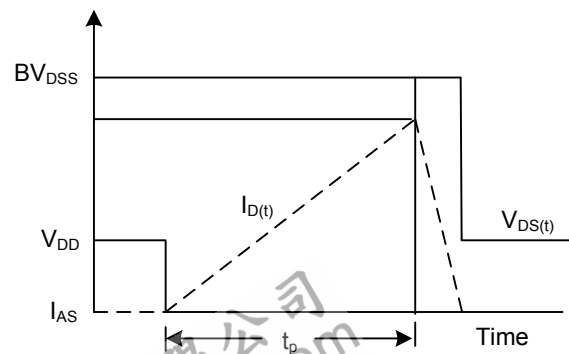
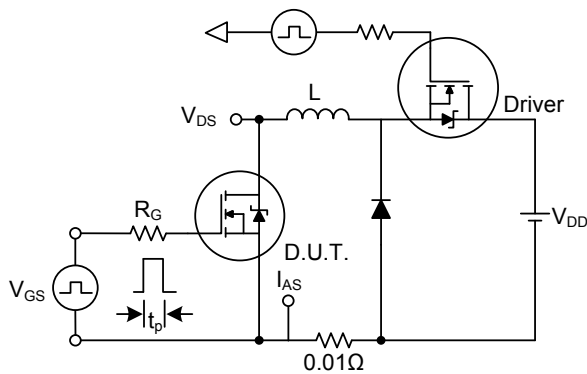
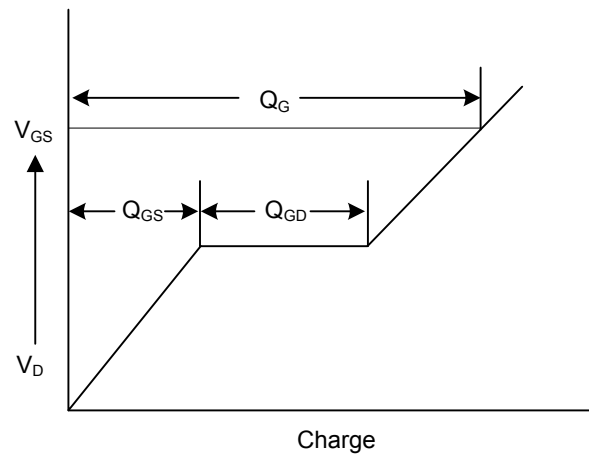
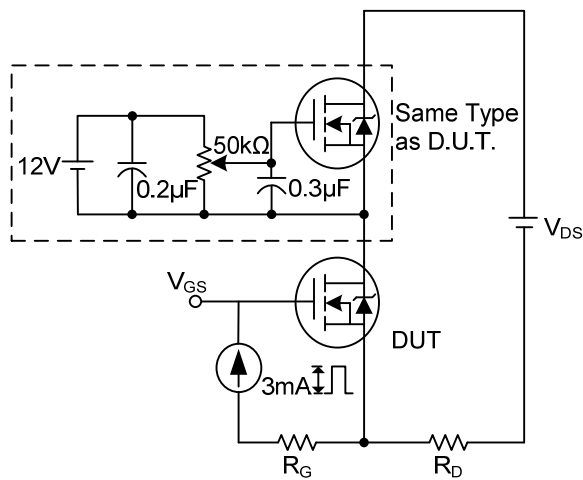
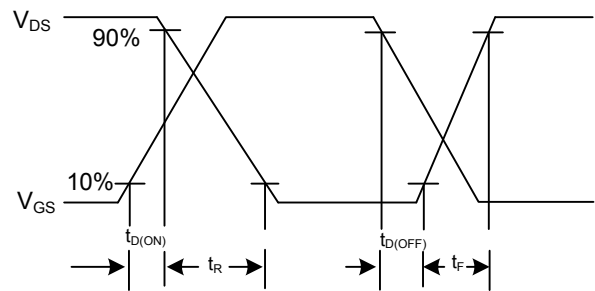
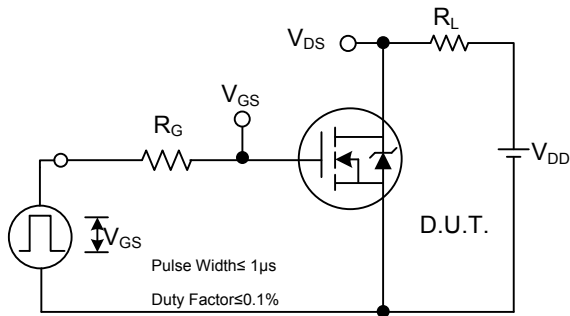


Peak Diode Recovery dv/dt Test Circuit

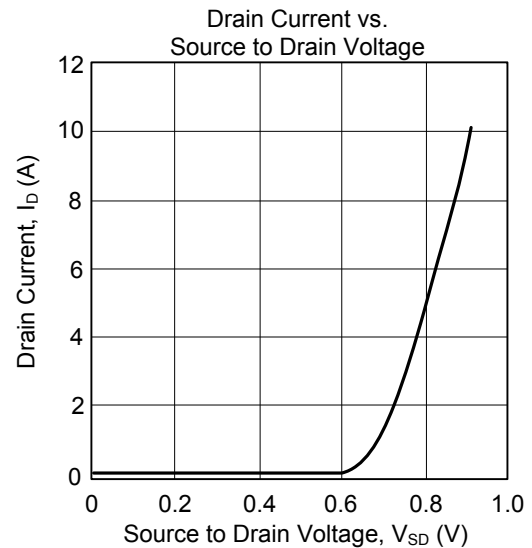
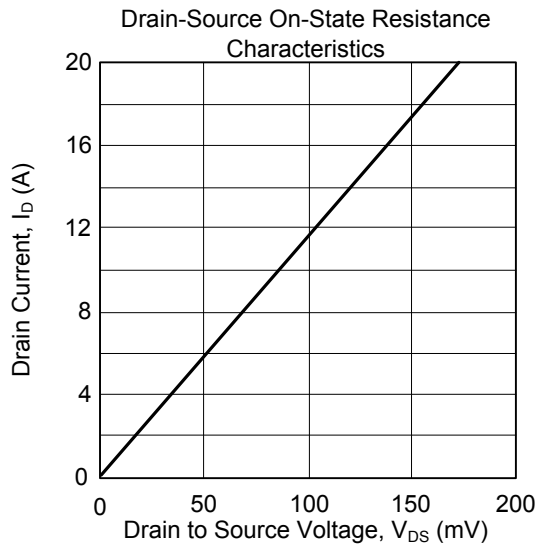
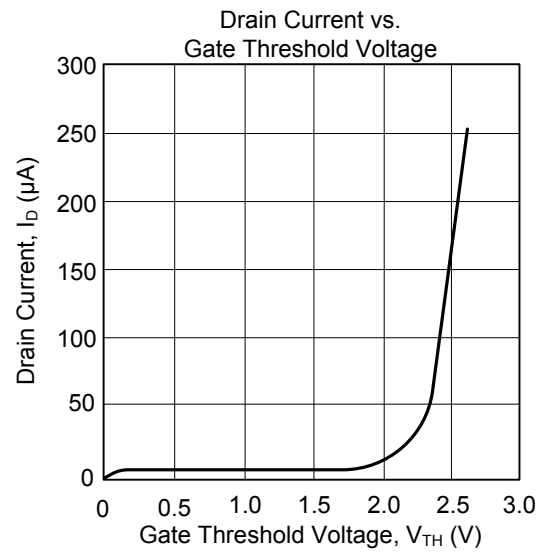
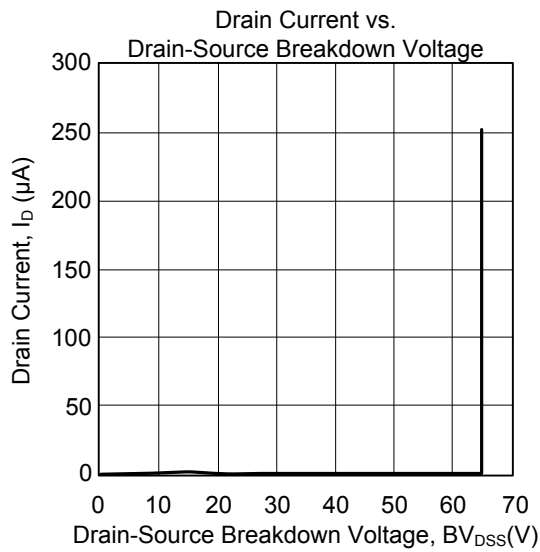


Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)



■ TYPICAL CHARACTERISTICS



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