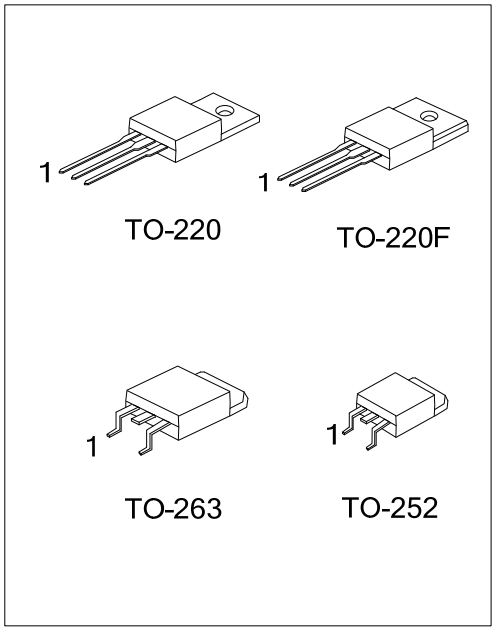
UTT25P10

Power MOSFET

25A, 100V P-CHANNEL POWER MOSFET



■ DESCRIPTION

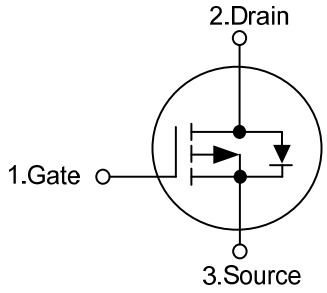
The UTC **UTT25P10** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance, and it can also withstand high energy in the avalanche.

This UTC **UTT25P10** is suitable for motor drivers, switching regulators, converters and relay drivers, etc.

■ FEATURES

* $R_{DS(ON)}$ < 0.15Ω @ V_{GS} = -10V, I_D = -25A
* High Switching Speed

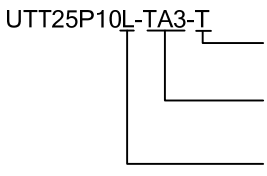
■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT25P10L-TA3-T	UTT25P10G-TA3-T	TO-220	G	D	S	Tube
UTT25P10L-TF3-T	UTT25P10G-TF3-T	TO-220F	G	D	S	Tube
UTT25P10L-TN3-R	UTT25P10G-TN3-R	TO-252	G	D	S	Tape Reel
UTT25P10L-TQ2-T	UTT25P10G-TQ2-T	TO-263	G	D	S	Tube
UTT25P10L-TQ2-R	UTT25P10G-TQ2-R	TO-263	G	D	S	Tape Reel

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



(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TF3: TO-220F, TN3: TO-252, TQ2: TO-263
(3) L: Lead Free, G: Halogen Free and Lead Free

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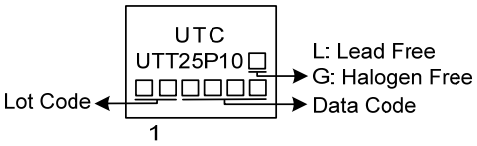
■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage (Note 2)		V_{DSS}	-100	V
Drain-Gate Voltage (R_{GS}=20kΩ)		V_{DGR}	-100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	-25	A
	Pulsed (Note 2)	I_{DM}	-60	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	70	mJ
Power Dissipation	TO-220/TO-263	P_D	100	W
	TO-220F		2	
	TO-252		50	
Junction Temperature		T_J	-55~+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. Repetitive rating: pulse width limited by maximum junction temperature.
3. L = 0.35mH, I_{AS} = 20A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

■ THERMAL CHARACTERISTICS

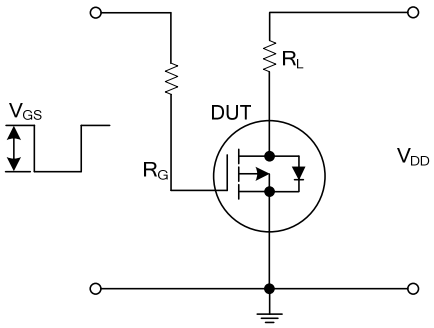
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	TO-220/TO-263	θ_{JC}	0.83	°C/W
	TO-220F		4.5	
	TO-252		2.5	

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

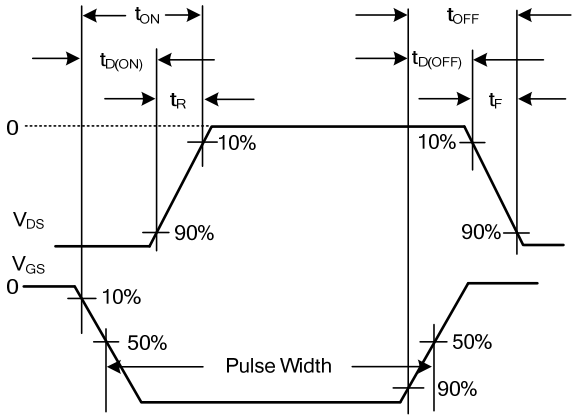
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D= -250μA, V_{GS}=0V	-100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=Rated BV_{DSS}, V_{GS}=0V			-1	μA
			V_{DS}=0.8xRated BV_{DSS}, V_{GS}=0V , T_C=125°C			-25	
Gate- Source Leakage Current	Forward	I_{GSS}	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= -250μA	-1		-3	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=-10V, I_D= -25A			0.15	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=-25V, f=1MHz		430		pF
Output Capacitance		C_{OSS}			145		pF
Reverse Transfer Capacitance		C_{RSS}			110		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=-10V, V_{DD}=-50V, I_D=-1.3A, I_G= -100μA		285		nC
Gate to Source Charge		Q_{GS}			16		nC
Gate to Drain Charge		Q_{GD}			16		nC
Turn-ON Delay Time		$t_{D(ON)}$	I_D=-0.5A, V_{DS}=-30V, R_{GS}=25Ω,V_{GS}=-10V		85		ns
Rise Time		t_R			60		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			780		ns
Fall-Time		t_F			150		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_{SD}=-12.5A			-1.4	V

Note: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.

■ TEST CIRCUITS AND WAVEFORMS



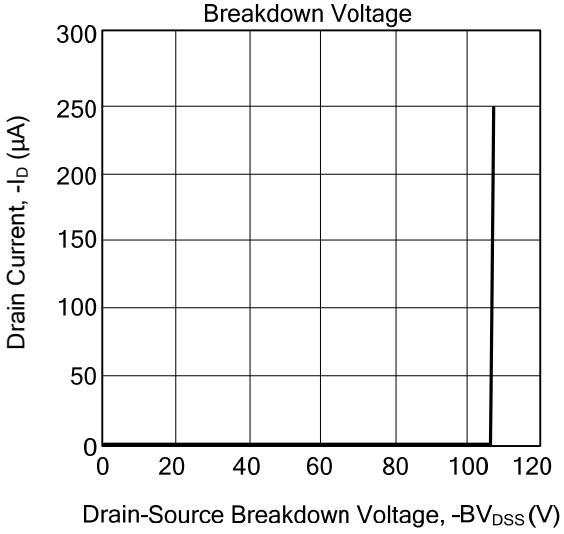
Switching Time Test Circuit



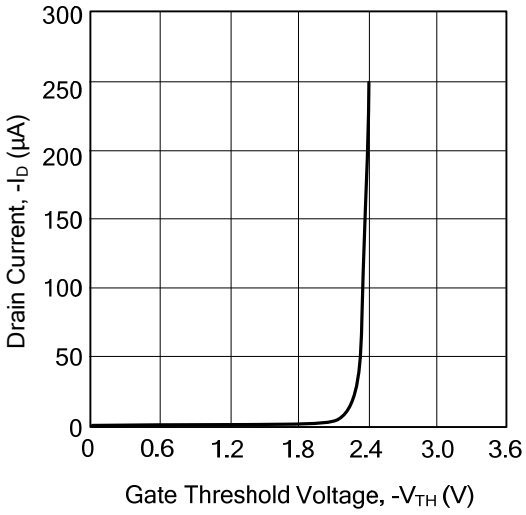
Resistive Switching Waveforms

■ TYPICAL CHARACTERISTICS

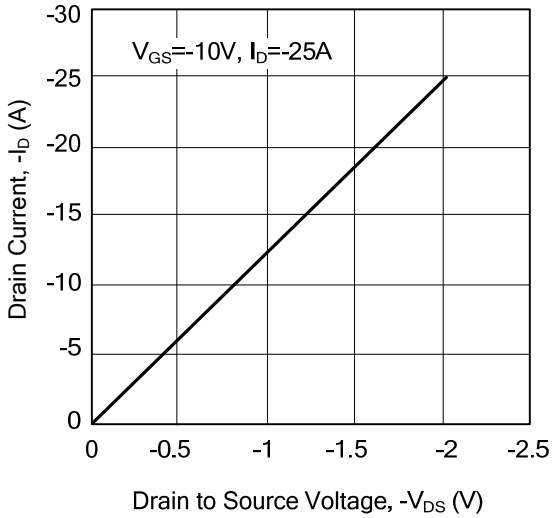
Drain Current vs. Drain-Source Breakdown Voltage



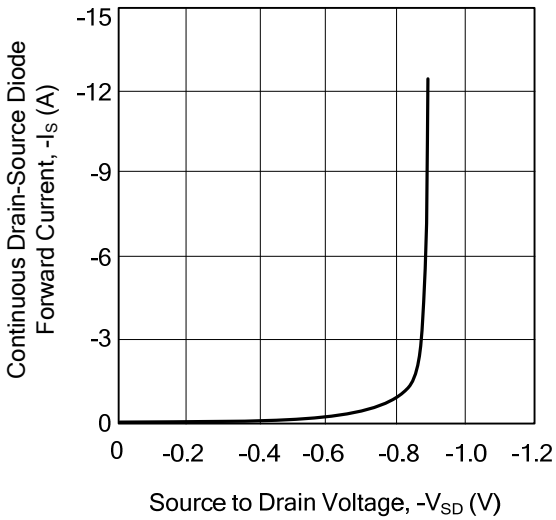
Drain Current vs. Gate Threshold Voltage



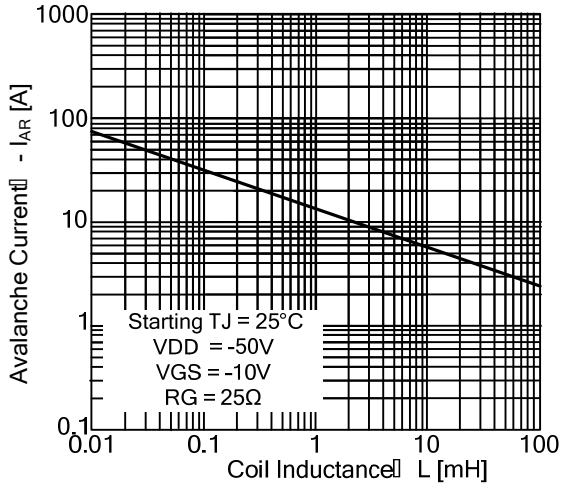
Drain-Source On-State Resistance Characteristics



Continuous Drain-Source Diode Forward Current vs. Source to Drain Voltage



Avalanche Current vs Inductive Load



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