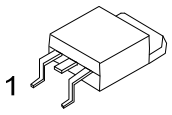
UTM3023

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

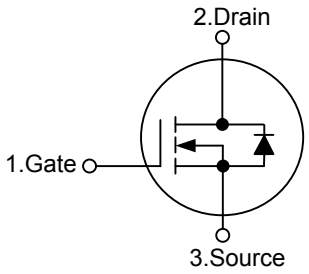


TO-252

■ FEATURES

* $R_{DS(ON)}$ < 20mΩ @ V_{GS} =10 V, I_{DS} =20 A
  $R_{DS(ON)}$ < 28mΩ @ V_{GS} =5 V, I_{DS} =10 A
* Low capacitance
* Optimized gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTM3023L-TN3-T	UTM3023G-TN3-T	TO-252	G	D	S	Tube
UTM3023L-TN3-R	UTM3023G-TN3-R	TO-252	G	D	S	Tape Reel

UTM3023L-TN3-T

(1)Packing Type — (1) T: Tube, R: Tape Reel

(2)Package Type — (2) TN3: TO-252

(3)Lead Plating — (3) L: Lead Free, G: Halogen Free

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	
Maximum Continuous Drain Current	I_D	30	A
Maximum Pulsed Drain Current	I_{DM}	70	
Maximum Power Dissipation	P_D	62.5	W
Maximum Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	

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.

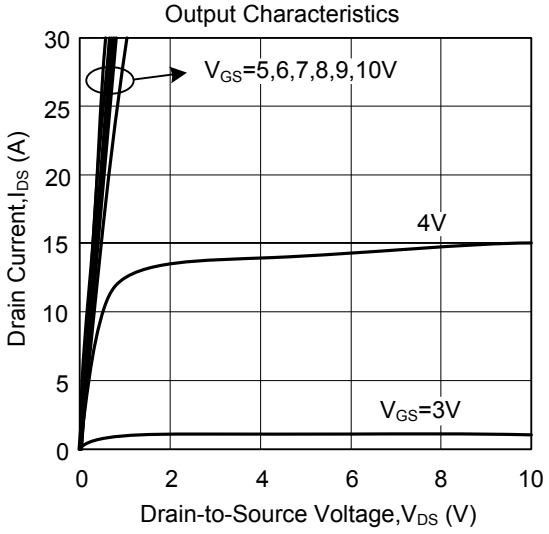
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_{DS} =250μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =24 V, V_{GS} =0 V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS} =0 V, V_{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_{DS} =250 μA	1	1.5	2	V
Drain-Source On-State Resistance(Note 2)	$R_{DS(ON)}$	V_{GS} =10 V, I_{DS} =20 A		15	20	mΩ
		V_{GS} =5 V, I_{DS} =10 A		22	28	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} =15 V, V_{GS} =0V, f=1.0MHz		1200		pF
Output Capacitance	C_{OSS}			220		
Reverse Transfer Capacitance	C_{RSS}			100		
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	I_{DS}=2 A,V_{DD}=15 V,R_G=6 Ω, V_{GEN} =10V		11	18	ns
Turn-ON Rise Time	t_R			17	26	
Turn-OFF Delay Time	$t_{D(OFF)}$			37	54	
Turn-OFF Fall Time	t_F			20	30	
Total Gate Charge (Note 2)	Q_G	V_{DS} =15V, V_{GS} =5V, I_{DS} =10A		15	20	nC
Gate-Source Charge	Q_{GS}			5.8		
Gate-Drain Charge	Q_{GD}			3.8		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	I_{SD}=15A,V_{GS}=0V		0.7	1.3	V

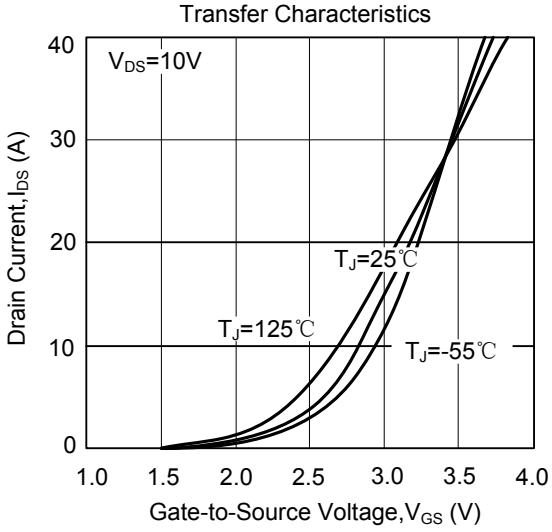
Note: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤2%
3. Surface Mounted on FR4 Board, t ≤ 10 sec.

■ TYPICAL CHARACTERISTICS

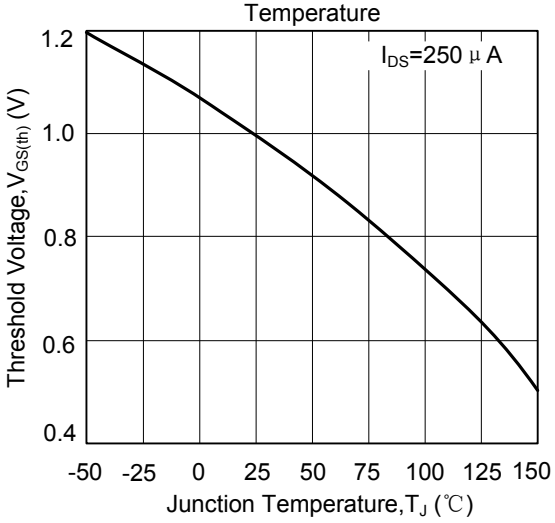
Output Characteristics



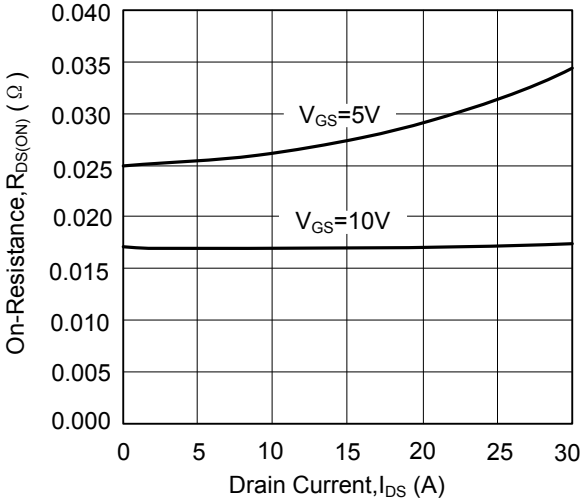
Transfer Characteristics



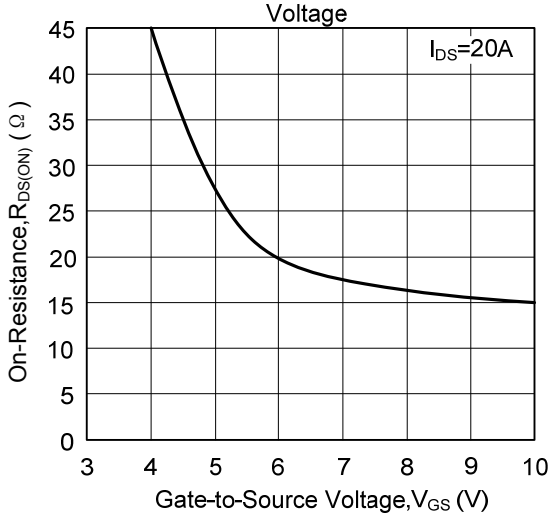
Threshold Voltage vs. Junction Temperature



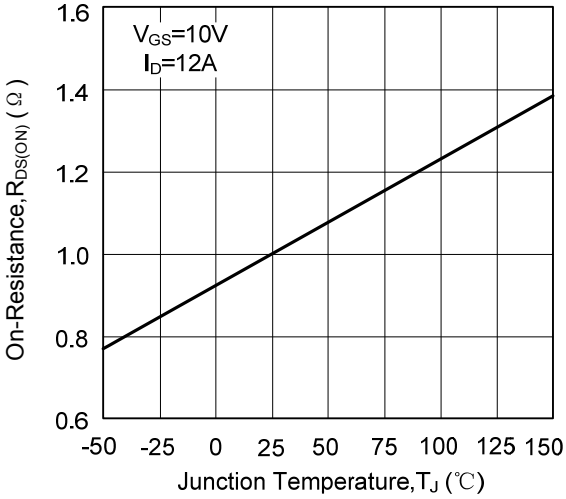
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage

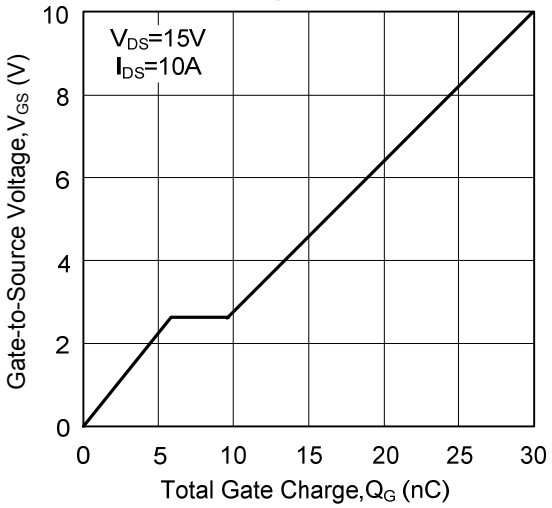


On-Resistance vs. Junction Temperature

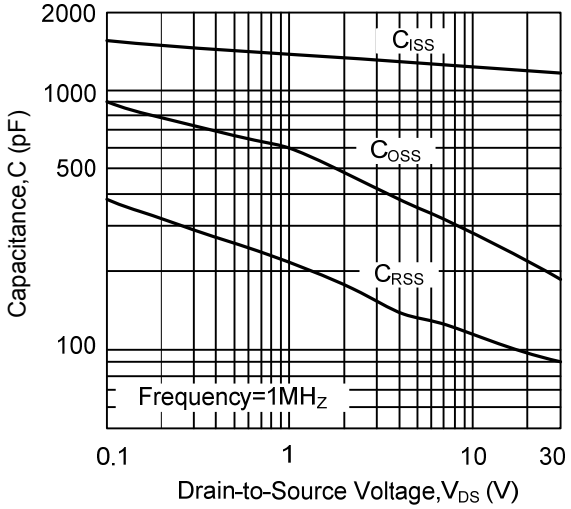


■ TYPICAL CHARACTERISTICS(Cont.)

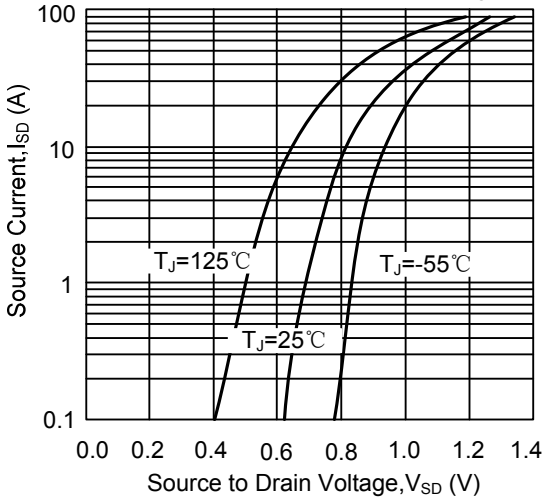
Gate Charge Characteristics



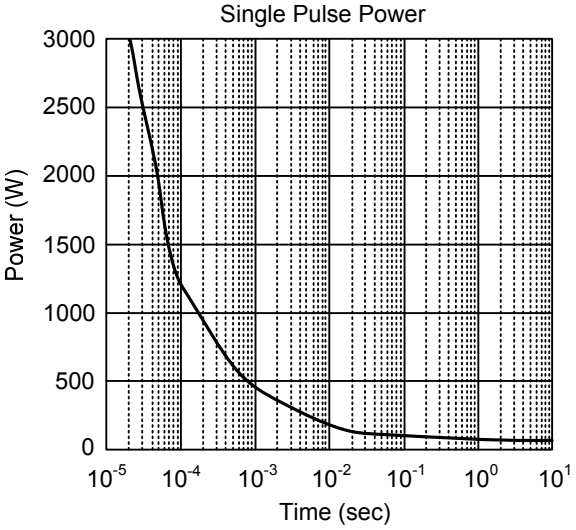
Capacitance Characteristics



Source-Drain Diode Forward Voltage



Single Pulse Power



Normalized Thermal Transient Impedance,Junction to Ambient