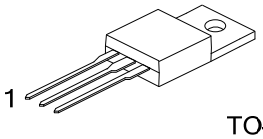
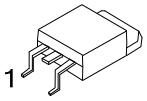
UTD36N03

Power MOSFET

N-CHANNEL ENHANCEMENT MODE



TO-220

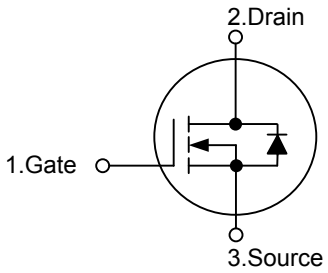


TO-252

■ FEATURES

* $R_{DS(ON)}$ < 17mΩ @V_{GS} = 10 V
* 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	
UTD36N03L-TA3-T	UTD36N03G-TA3-T	TO-220	G	D	S	Tube
UTD36N03L-TN3-T	UTD36N03G-TN3-T	TO-252	G	D	S	Tube
UTD36N03L-TN3-R	UTD36N03G-TN3-R	TO-252	G	D	S	Tape Reel

UTD36N03L-TA3-T (1)Packing Type (2)Package Type (3)Lead Plating	(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TN3: TO-252 (3) L: Lead Free, G: Halogen Free

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current		I_D	43.4	A
Pulsed Drain Current (Note 1)		I_{DM}	173.6	A
Power Dissipation	TO-220	P_D	1.9	W
	TO-252		1.6	W
Junction Temperature		T_J	+175	°C
Storage Temperature		T_{STG}	-55 ~ +175	°C

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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction-to-Ambient	TO-220	θ_{JA}	62.5	°C/W
	TO-252		75	°C/W

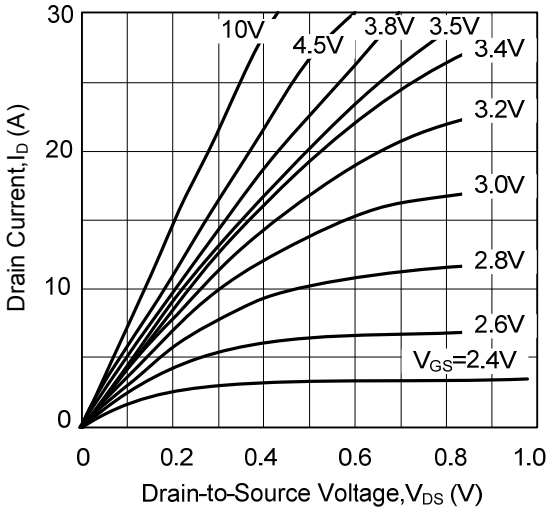
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250 μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =24V, V_{GS} =0V		0.05	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{GS} =0V		10	100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250 μA	1	1.5	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =4.5V, I_D =12A		18	22	mΩ
		V_{GS}=10 V, I_D =25 A		14	17	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} =25 V, V_{GS} =0V, f=1.0MHz		690		pF
Output Capacitance	C_{OSS}			160		
Reverse Transfer Capacitance	C_{RSS}			110		
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{DS} =15 V, V_{GS} =10V, R_G =10Ω, R_L =0.6 Ω		6		ns
Turn-ON Rise Time	t_R			10		
Turn-OFF Delay Time	$t_{D(OFF)}$			33		
Turn-OFF Fall-Time	t_F			19		
Total Gate Charge	Q_G	V_{DS} =15V,V_{GS} =10V,I_D =36 A		18.5		nC
Gate-Source Charge	Q_{GS}			4.2		
Gate-Drain Charge	Q_{GD}			2.9		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=25A, V_{GS}=0V		0.97	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				43.4	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				173.6	
Reverse Recovery Time	t_{RR}	V_R=15V,I_F=I_S, dI_F/dt=100A/μs		15	18	ns
Reverse Recovery Charge	Q_{RR}			2	3	nC

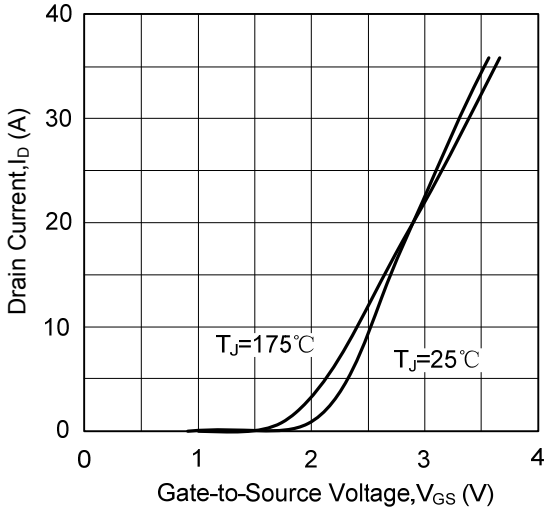
Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤2%.

■ TYPICAL CHARACTERISTICS

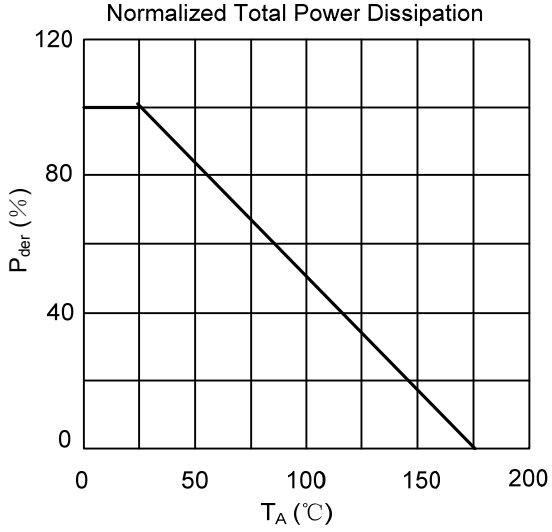
Output Characteristics



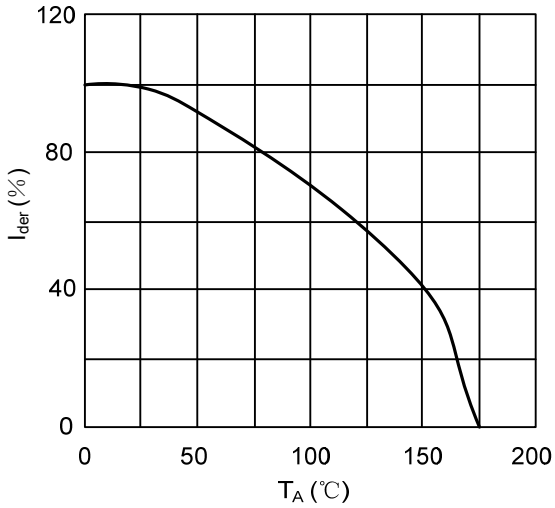
Transfer Characteristics



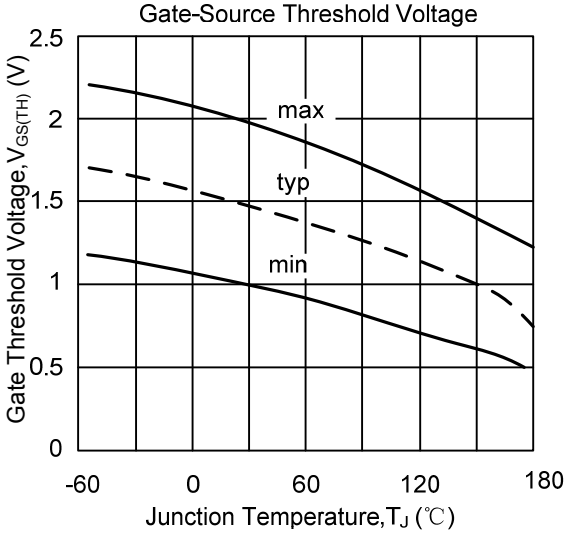
Normalized Total Power Dissipation



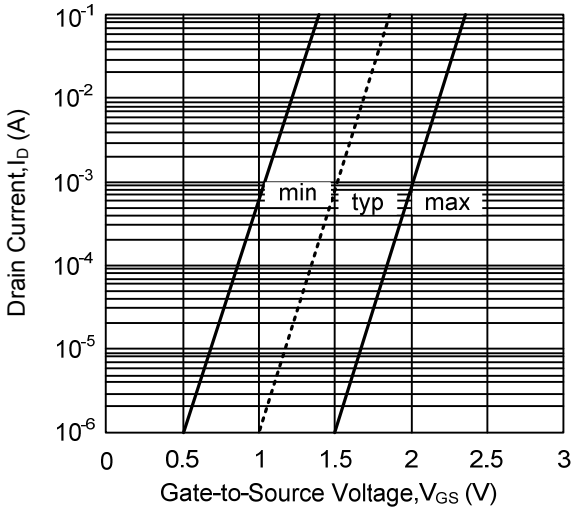
Normalized Continuous Drain Current



Gate-Source Threshold Voltage

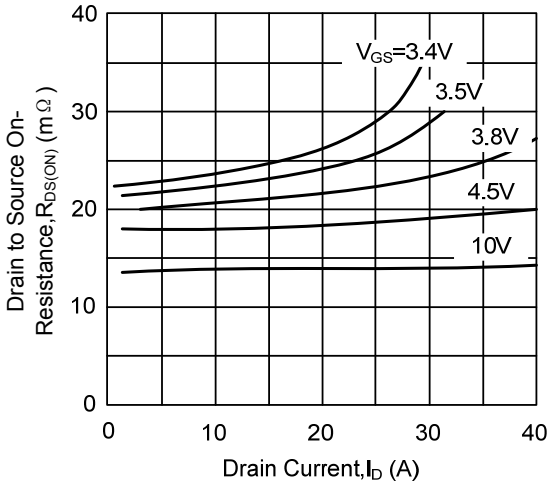


Sub-Threshold Drain Current

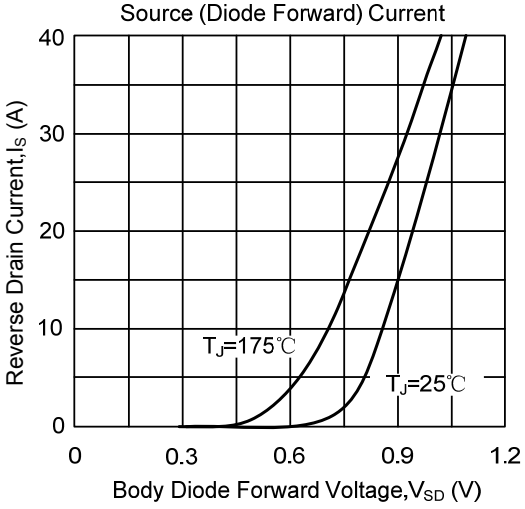


■ TYPICAL CHARACTERISTICS(Cont.)

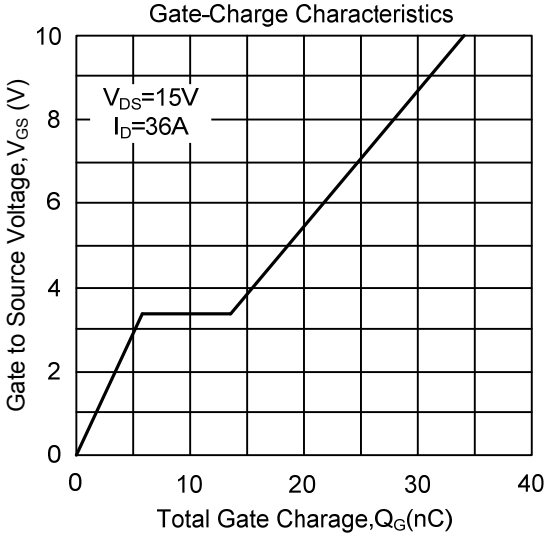
Drain-Source On-State Resistance



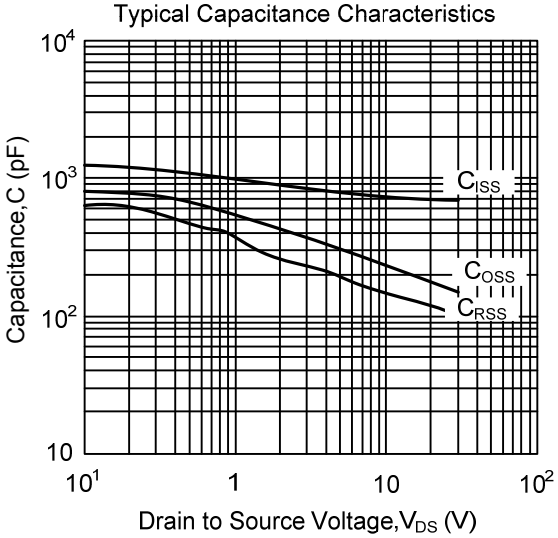
Source (Diode Forward) Current



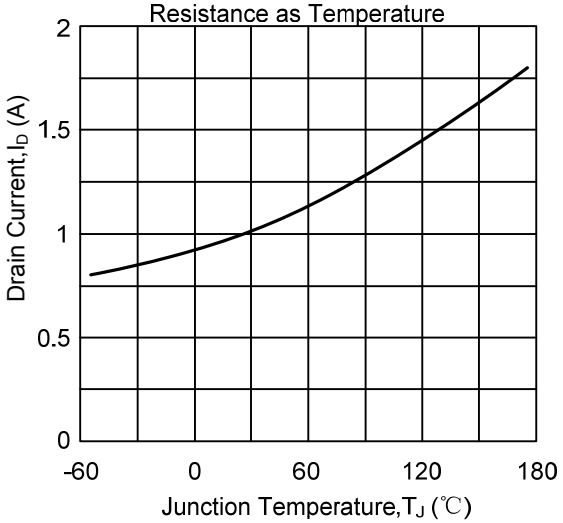
Gate-Charge Characteristics



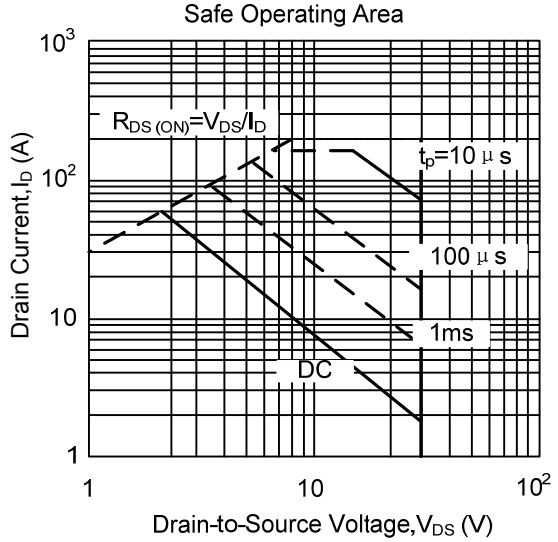
Typical Capacitance Characteristics



Normalized Drain-Source On-Resistance as Temperature



Safe Operating Area



■ TYPICAL CHARACTERISTICS(Cont.)