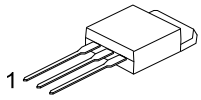
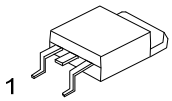
UT45N03

Power MOSFET

40A, 25V N-CHANNEL POWER MOSFET



TO-251

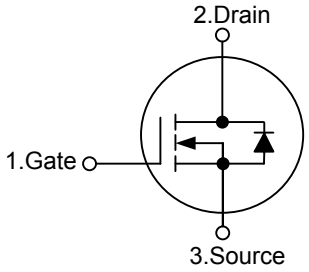


TO-252

■ FEATURES

* $R_{DS(ON)}$ = 21mΩ @V_{GS} = 10 V
* Low capacitance
* Optimized gate charge
* Fast switching capability
* Avalanche energy specified

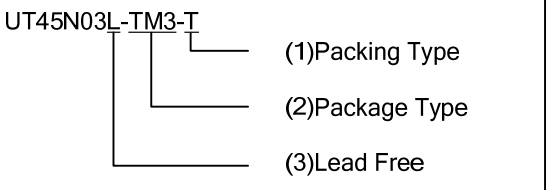
■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT45N03L-TM3-R	UT45N03G-TM3-R	TO-251	G	D	S	Tube
UT45N03L-TN3-T	UT45N03G-TN3-T	TO-252	G	D	S	Tube
UT45N03L-TN3-R	UT45N03G-TN3-R	TO-252	G	D	S	Tape Reel

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



(1) R: Tape Reel, T: Tube

(2) TM3: TO-251, TN3: TO-252

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

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	25	V
Gate-Source Voltage	V_{GSS}	±15	V
Continuous Drain Current	I_D	40	A
Pulsed Drain Current (Note 1)	I_{DM}	160	A
Power Dissipation	P_D	65	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°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	θ_{JA}	50	°C/W
Junction to Case	θ_{JC}	1.92	°C/W

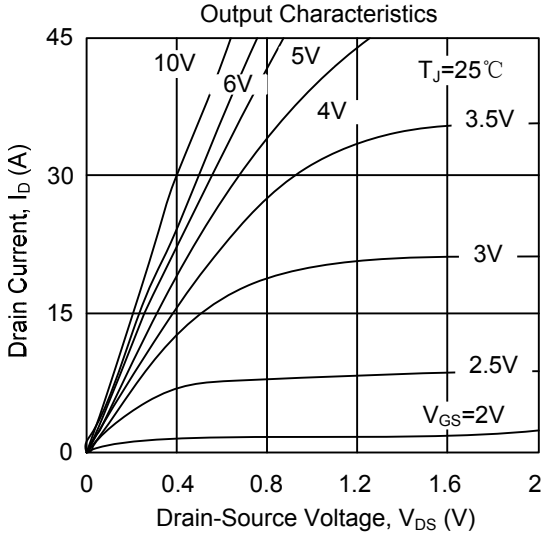
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	25			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=25V, V_{GS} =0V		0.05	10	μA
Drain-Source Breakdown Voltage	I_{GSS}	V_{DS} =0V, V_{GS} = ±5V		10	100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D = 1mA	1	1.5	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=5V, I_D=25A		17.5	24	mΩ
		V_{GS}=10V, I_D=25A		13	21	
		V_{GS}=3.5V, I_D=5.2A		22	40	
DYNAMICCHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} =25 V, V_{GS} =0V, f=1MHz		700		pF
Output Capacitance	C_{OSS}			290		
Reverse Transfer Capacitance	C_{RSS}			200		
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS} = 10 V, V_{DD} =15 V, I_D = 15 A, R_G = 6Ω		10	20	ns
Turn-ON Rise Time	t_R			60	90	
Turn-OFF Delay Time	$t_{D(OFF)}$			35	60	
Turn-OFF Fall-Time	t_F			40	60	
Total Gate Charge	Q_G	V_{DD} =24V,V_{GS} =5V, I_D =40 A		19		nC
Gate-to-Source Charge	Q_{GS}			5		
Gate-to-Drain Charge	Q_{GD}			8	11	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=25A,V_{GS}=0V		0.95	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				40	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				160	

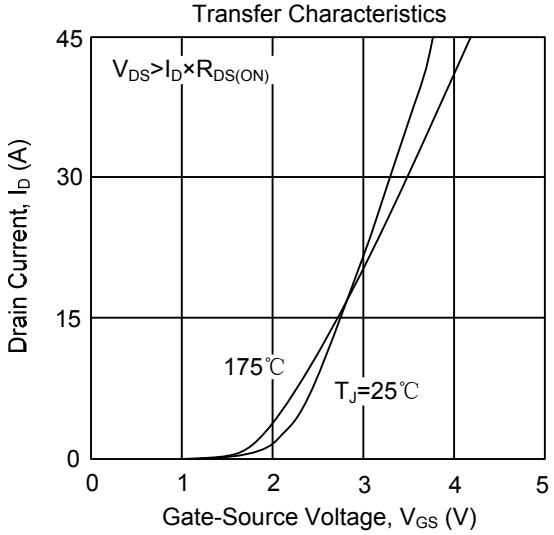
Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤2%.

■ TYPICAL CHARACTERISTICS

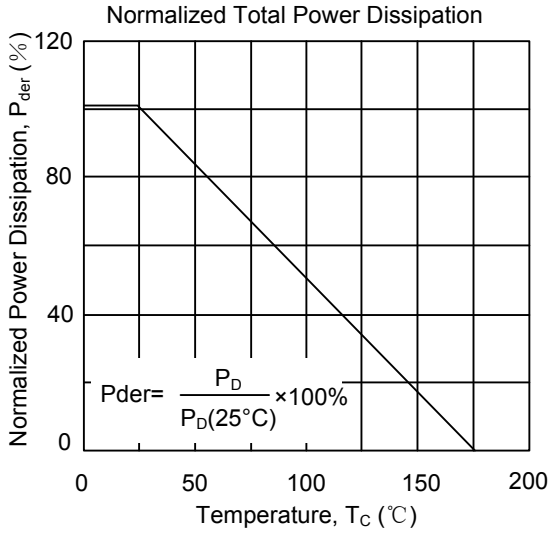
Output Characteristics



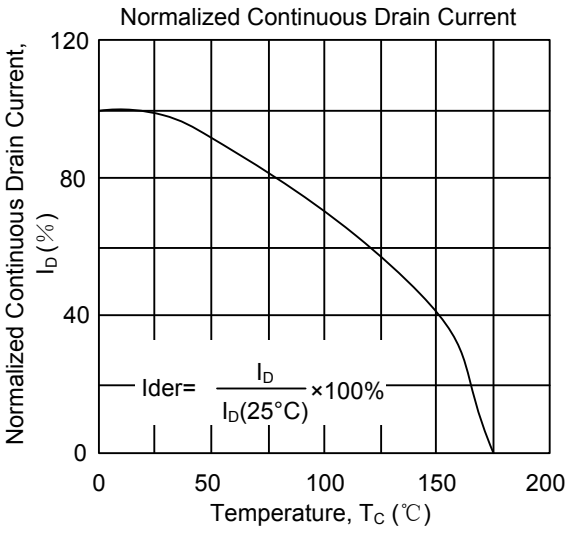
Transfer Characteristics



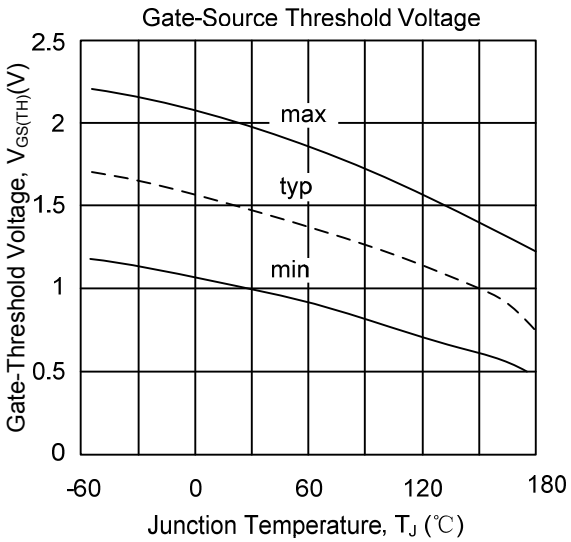
Normalized Total Power Dissipation



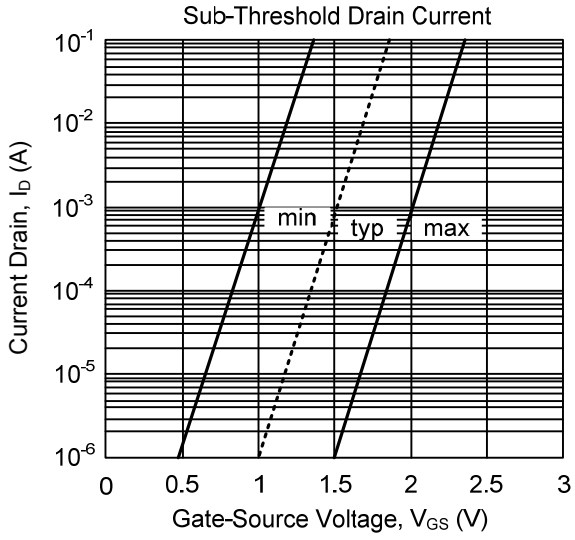
Normalized Continuous Drain Current



Gate-Source Threshold Voltage

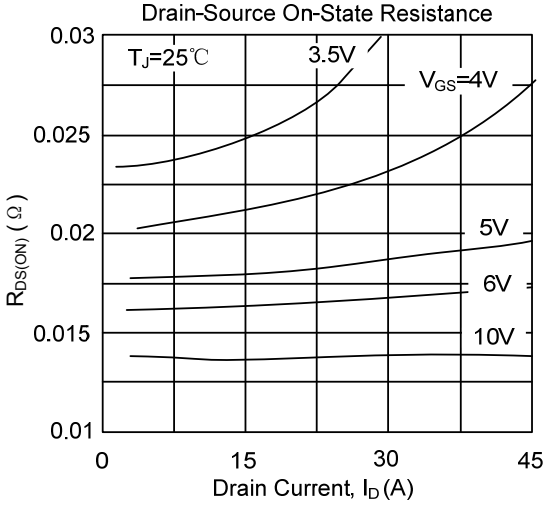


Sub-Threshold Drain Current

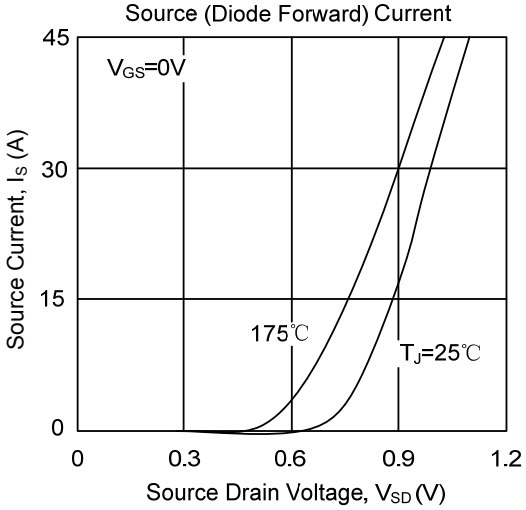


■ TYPICAL CHARACTERISTICS(Cont.)

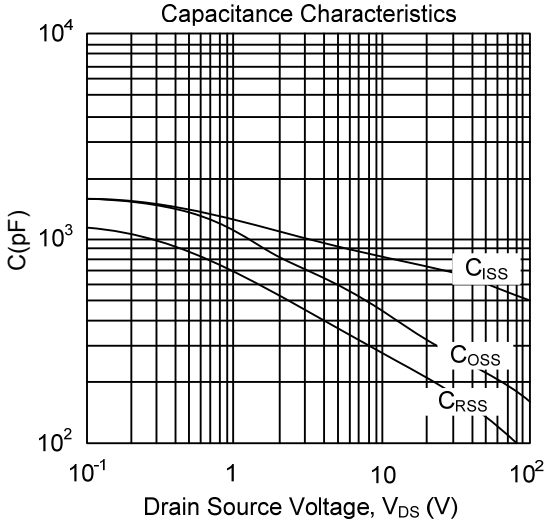
Drain-Source On-State Resistance



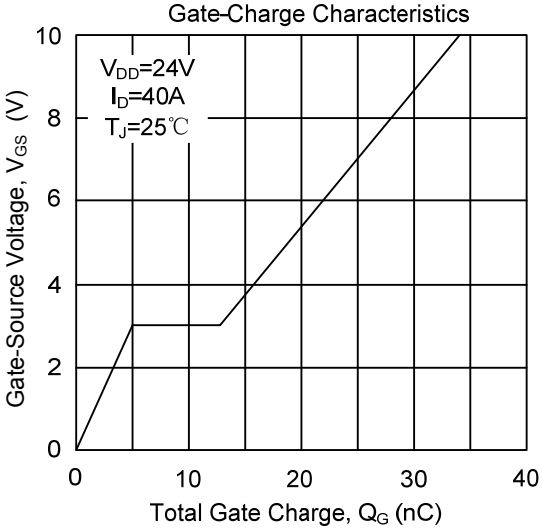
Source (Diode Forward) Current



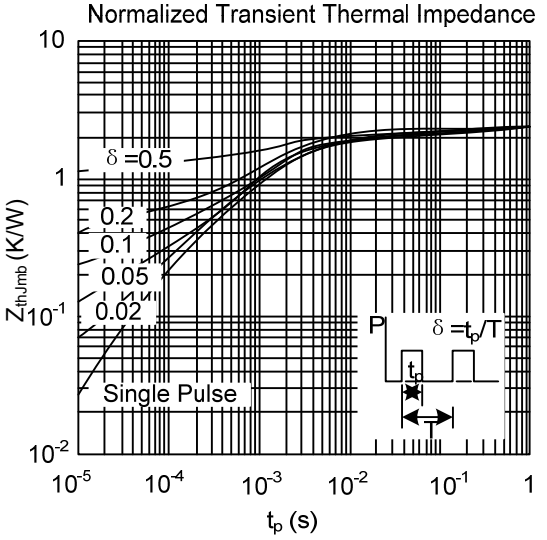
Capacitance Characteristics



Gate-Charge Characteristics



Normalized Transient Thermal Impedance



Safe Operating Area