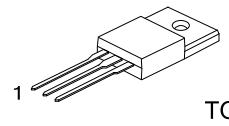
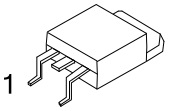
UT30N03

Power MOSFET

N-CHANNEL ENHANCEMENT MODE



TO-220F

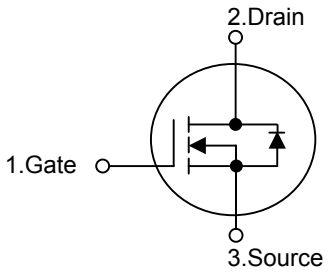


TO-252

■ FEATURES

* $R_{DS(ON)}$ = 30mΩ @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	
UT30N03L-TF3-T	UT30N03G-TF3-T	TO-220F	G	D	S	Tube
UT30N03L-TN3-R	UT30N03G-TN3-R	TO-252	G	D	S	Tape Reel
UT30N03L-TN3-T	UT30N03G-TN3-T	TO-252	G	D	S	Tube

UT30N03L-TF3-R

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

(2)Package Type — (2) TF3: TO-220F, TN3: TO-252

(3)Lead Plating — (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_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current		I_D	30	A
Pulsed Drain Current		I_{DM}	40	A
Avalanche Energy		E_{AS}	90	mJ
Power Dissipation	TO-220F	P_D	47	W
	TO-252		42	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	TO-220F	θ_{JA}	62.5	°C/W
	TO-252		110	°C/W
Junction-to-Case	TO-220F	θ_{JC}	2.66	°C/W
	TO-252		3.0	°C/W

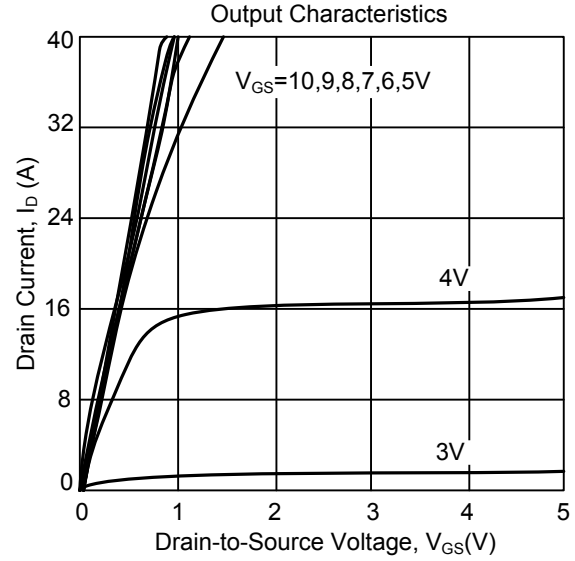
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.0			V
Static Drain-Source On-State Resistance (Note2)	$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 15 A		20	30	mΩ
		V_{GS} = 4.5 V, I_D = 12.5 A		30	45	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1MHz		1170		pF
Output Capacitance	C_{OSS}			320		pF
Reverse Transfer Capacitance	C_{RSS}			60		pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = 15V, I_D ≒ 30A, R_L = 0.5Ω, V_{GS}=10V, R_G=7.5Ω (Note 4, 5)		10	20	ns
Turn-On Rise Time	t_R			10	20	ns
Turn-Off Delay Time	$t_{D(OFF)}$			25	40	ns
Turn-Off Fall Time	t_F			15	30	ns
Total Gate Charge	Q_G	V_{DS}= 15V, I_D= 30A, V_{GS}= 10 V (Note 4, 5)		18	35	nC
Gate-Source Charge	Q_{GS}			5.5		nC
Gate-Drain Charge	Q_{GD}			2		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_F = 30A		1.1	1.5	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				30	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				40	A
Reverse Recovery Time	t_{RR}	I_F=30A, dI_F/dt=100A/μs		50	100	ns

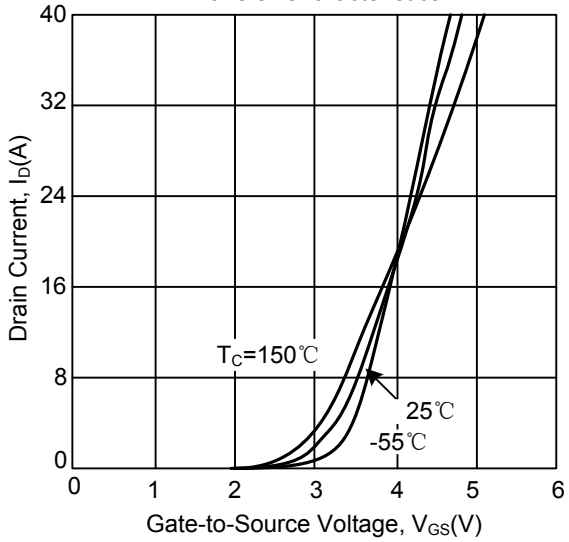
Notes: 1. Guaranteed by design, not subject to production testing.
2. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
3. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS

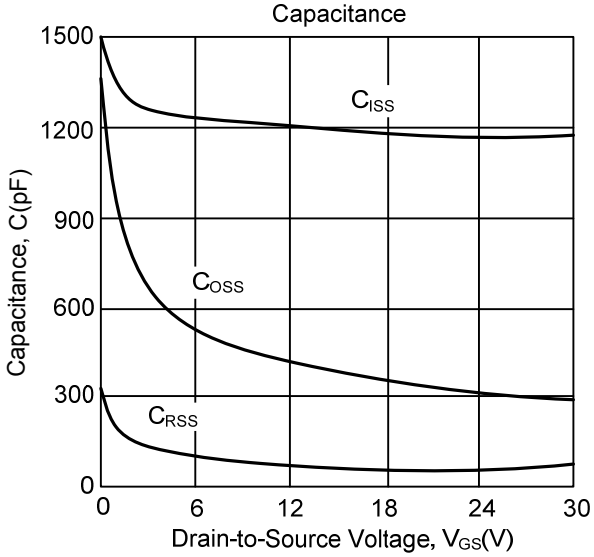
Output Characteristics



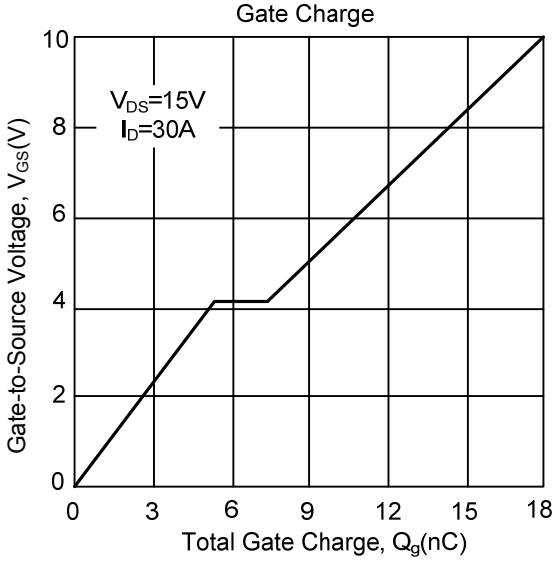
Transfer Characteristics



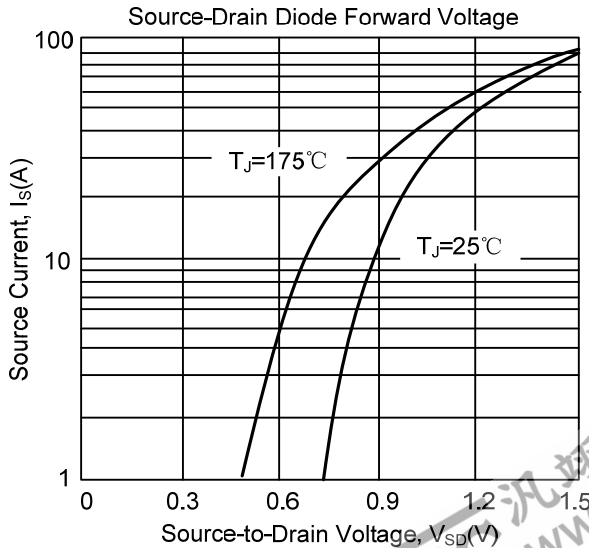
Capacitance



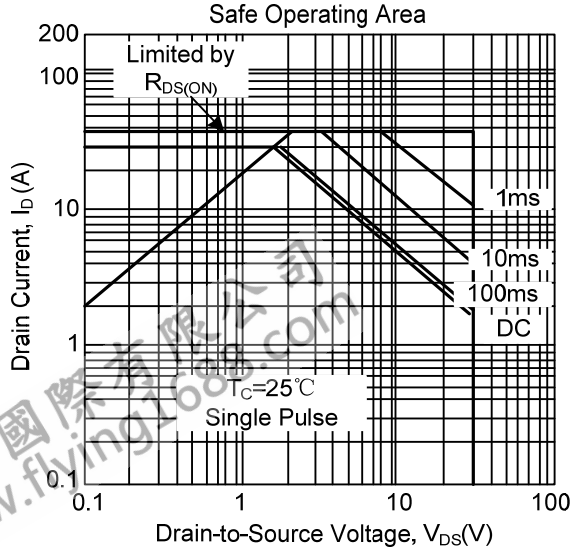
Gate Charge



Source-Drain Diode Forward Voltage



Safe Operating Area



■ TYPICAL CHARACTERISTICS(Cont)