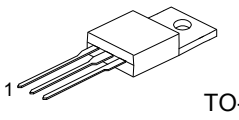
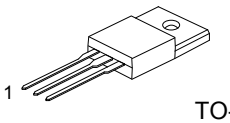
UT70P03

Power MOSFET

75A, 30V P-CHANNEL POWER MOSFET



TO-220



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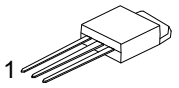
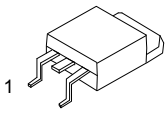


TO-251



TO-252

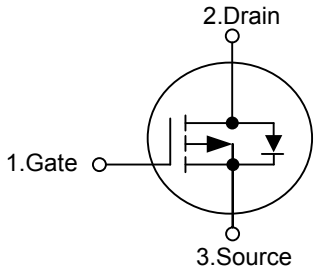
■ DESCRIPTION

The **UT70P03** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

* $R_{DS(ON)}$ = 8mΩ @ V_{GS} = -10 V
* Low Capacitance
* Low Gate Charge
* Fast Switching Capability
* Avalanche Energy Specified

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT70P03L-TA3-T	UT70P03G-TA3-T	TO-220	G	D	S	Tube
UT70P03L-TF3-T	UT70P03G-TF3-T	TO-220F	G	D	S	Tube
UT70P03L-TM3-T	UT70P03G-TM3-T	TO-251	G	D	S	Tube
UT70P03L-TN3-R	UT70P03G-TN3-R	TO-252	G	D	S	Tape Reel

UT70P03L-TA3-T
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) R: Tape Reel, T: Tube

(2) TA3: TO-220, TF3: TO-220F, TM3: TO-251, TN3: TO-252

(3) G: Halogen Free, L: Lead 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	V
Continuous Drain Current , V_{GS}=4.5V	T_C=25°C	I_D	-75	A
Pulsed Drain Current(Note 2)		I_{DM}	-350	A
Power Dissipation (T_C=25°C)	TO-220	P_D	147	W
	TO-220F		37	
	TO-251/ TO-252		107	
Junction Temperature		T_J	+175	°C
Strong Temperature		T_{STG}	-55 ~ +175	°C

Note: 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. Pulse width limited by safe operating area.

■ THERMAL DATA

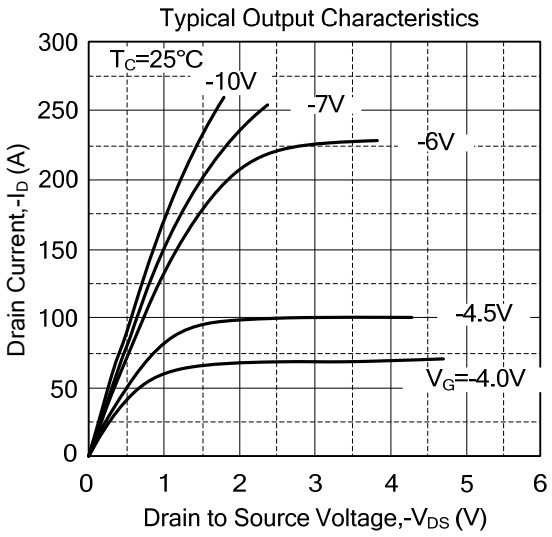
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220/TO-220F	θ_{JA}	62.5	°C/W
	TO-251/ TO-252		110	
Junction to Case	TO-220	θ_{JC}	0.85	°C/W
	TO-220F		3.4	
	TO-251/ TO-252		1.4	

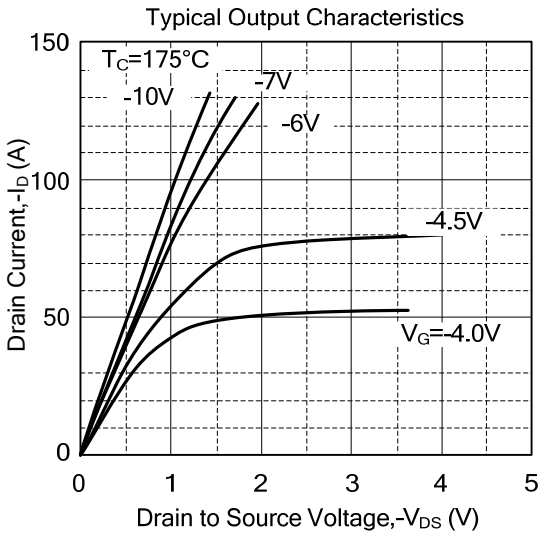
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

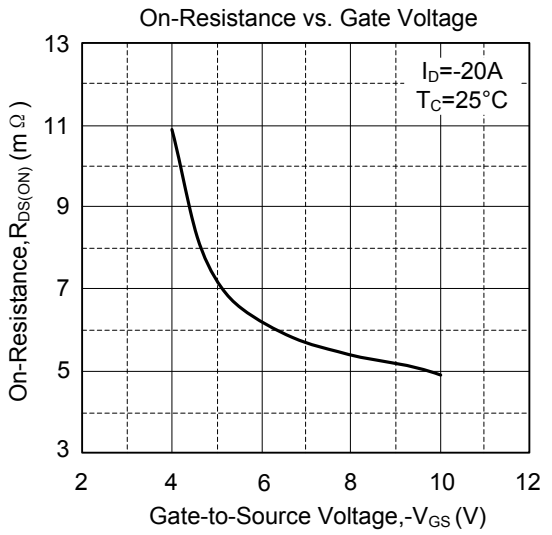
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =-250 μA	-30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Reference to 25°C, I_D=-1mA		-0.018		V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS} = -30 V, V_{GS} =0 V, T_J =25°C			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20 V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =-250 μA	-1		-3	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	V_{GS} =-10 V, I_D =-45 A			8	mΩ
		V_{GS} =-4.5 V, I_D =-30 A			10	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS} =-25 V, V_{GS} =0 V, f=1.0MHz		2700	4200	pF
Output Capacitance	C_{OSS}			550		pF
Reverse Transfer Capacitance	C_{RSS}			380		pF
SWITCHING PARAMETERS						
Total Gate Charge(Note 2)	Q_G	V_{DS} =-24 V, V_{GS} =-4.5 V, I_D =-30 A		33	52	nC
Gate Source Charge	Q_{GS}			7.5		nC
Gate Drain ("Miller") Charge	Q_{GD}			24		nC
Turn-ON Delay Time(Note 2)	$t_{D(ON)}$	V_{GS}=-10V,V_{DS}=-15V, R_D=0.5 Ω, I_D =-30 A , R_G =3.3 Ω		11.2		ns
Turn-ON Rise Time	t_R			77		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			35		ns
Turn-OFF Fall-Time	t_F			67		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage(Note 2)	V_{SD}	I_S=-45 A,V_{GS}=0V			-1.3	V
Reverse Recovery Time	t_{RR}	I_S=-30 A, V_{GS}=0 V, dI/dt=100 A/μs		28		ns
Reverse Recovery Charge	Q_{RR}			10		nC

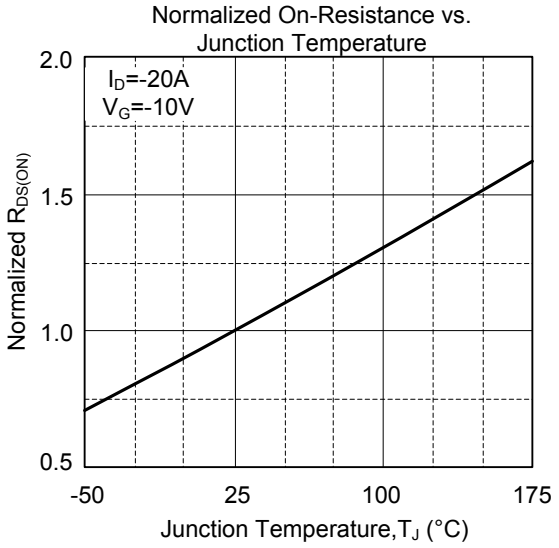
Notes: 1.Pulse width ≤ 300μs, duty cycle ≤ 2%.

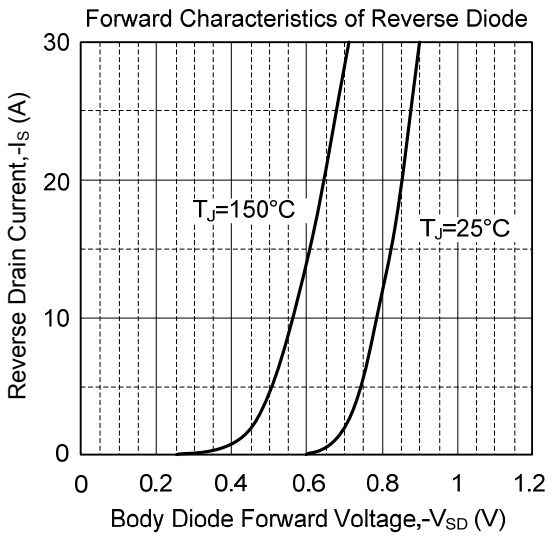
■ TYPICAL CHARACTERISTICS

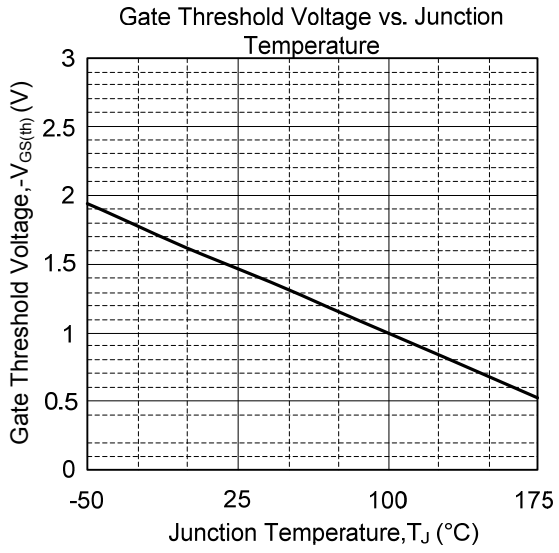






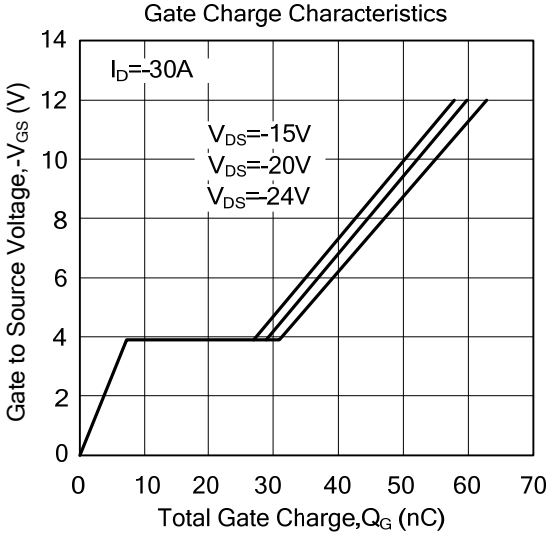




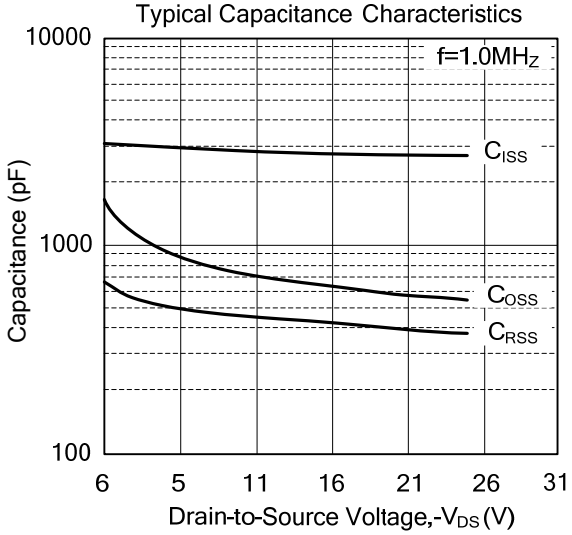


■ TYPICAL CHARACTERISTICS(Cont.)

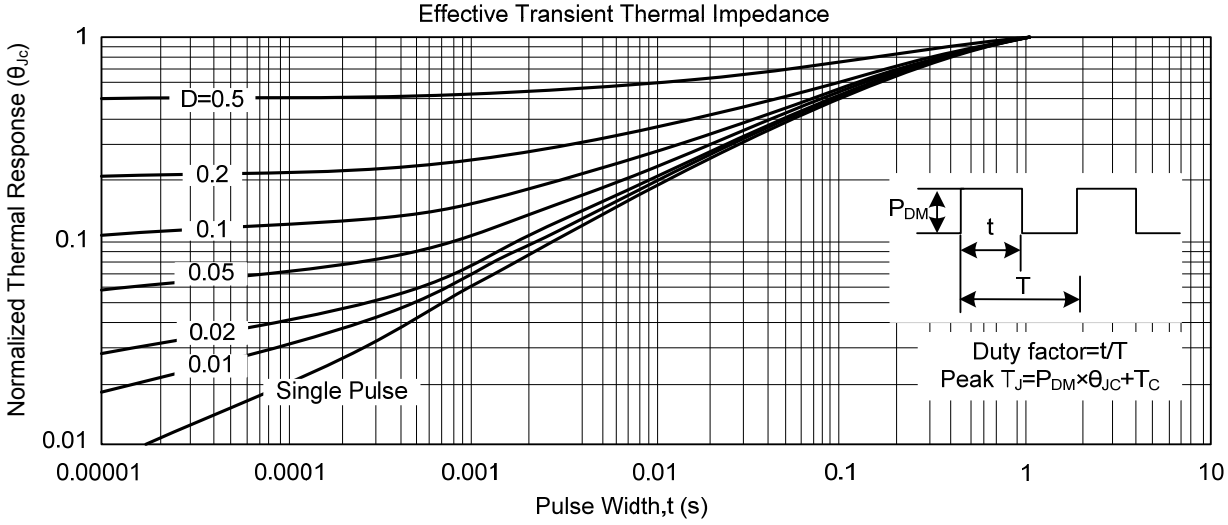
Gate Charge Characteristics



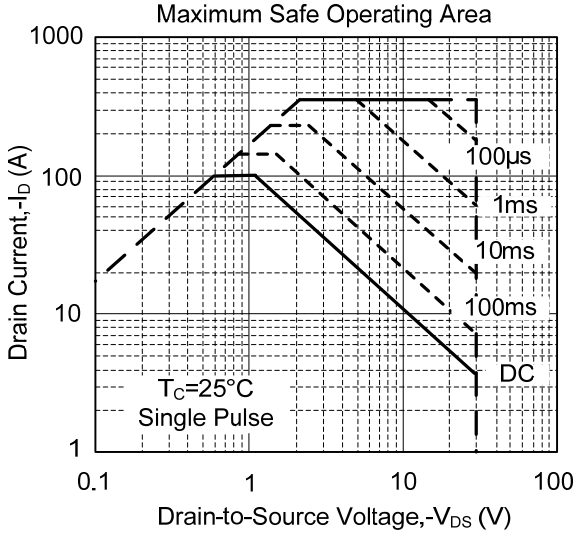
Typical Capacitance Characteristics



Effective Transient Thermal Impedance



Maximum Safe Operating Area



Gate Charge Waveform