



# UT60T03

**Power MOSFET**

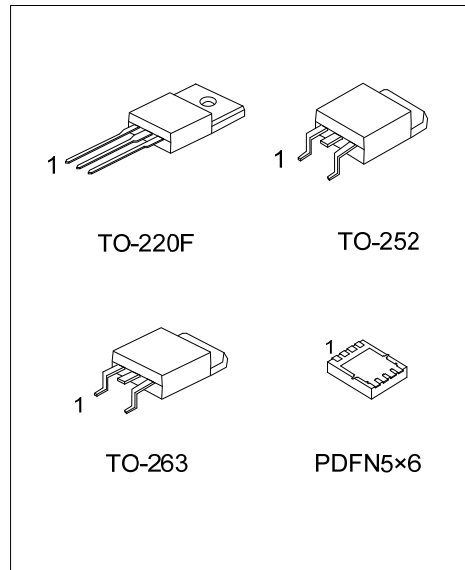
## 30V, 45A N-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

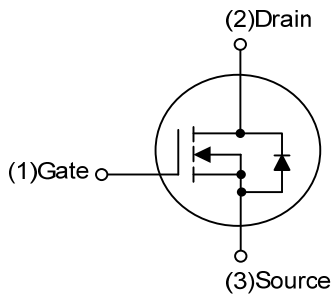
The **UT60T03** can provide excellent  $R_{DS(ON)}$  and low gate charge by using UTC's advanced trench technology.

■ FEATURES

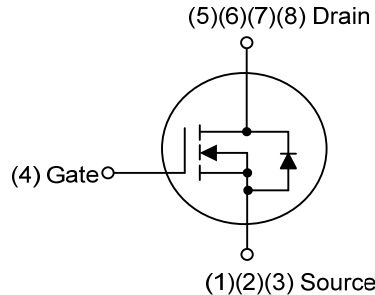
- \* Very simple drive requirement
- \* Very low gate charge
- \* Fast switching



■ SYMBOL



TO-220F/TO-252/TO-263



SOP-8/PDFN5x6

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT60T03L-TF3-T	UT60T03G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UT60T03L-TN3-R	UT60T03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT60T03L-TQ2-R	UT60T03G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UT60T03L-TQ2-T	UT60T03G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UT60T03L-P5060-R	UT60T03G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

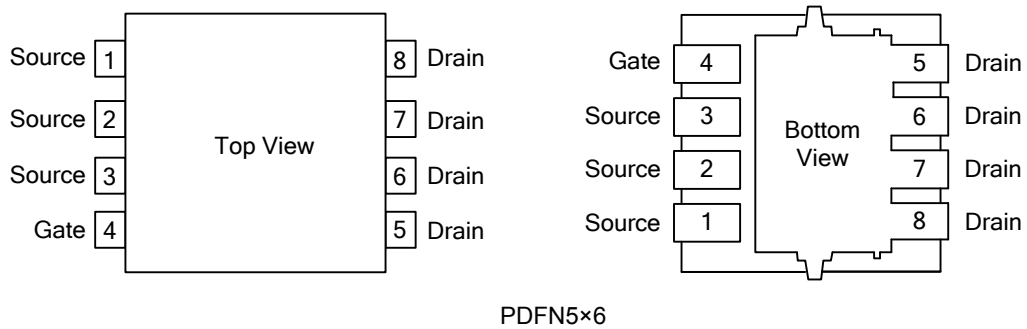
Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UT60T03G-TF3-T</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel, T: Tube</li> <li>(2) TF3: TO-220F, TN3: TO-252, TQ2: TO-263</li> <li>P5060: PDFN5x6</li> <li>(3) G: Halogen Free and Lead Free, L: Lead</li> </ul>
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MARKING

TO-220F / TO-252 / TO-262	PDFN5x6

PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Continuous Drain Current		$I_D$	45	A
Pulsed Drain Current (Note 2)		$I_{DM}$	120	A
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	TO-220F	$P_D$	56	W
	TO-252		44	
	TO-263		54	
	PDFN5x6		21	
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-55 ~ +175	$^\circ\text{C}$

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	RATINGS	UNIT
Junction to Ambient	TO-220F	$\theta_{JA}$	62.5	$^\circ\text{C/W}$
	TO-252		110	
	TO-263		62	
	PDFN5x6		46	
Junction to Case	TO-220F	$\theta_{JC}$	2.66	$^\circ\text{C/W}$
	TO-252		3.4	
	TO-263		1.24	
	PDFN5x6		6	

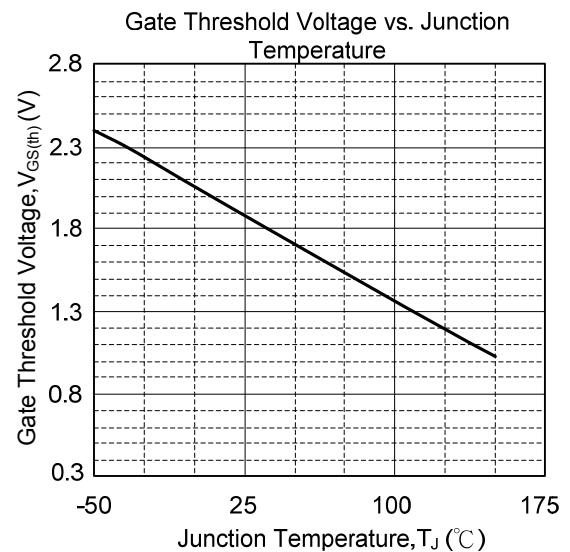
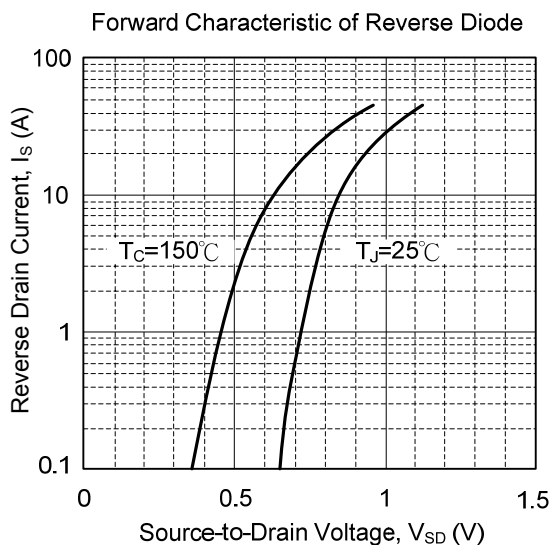
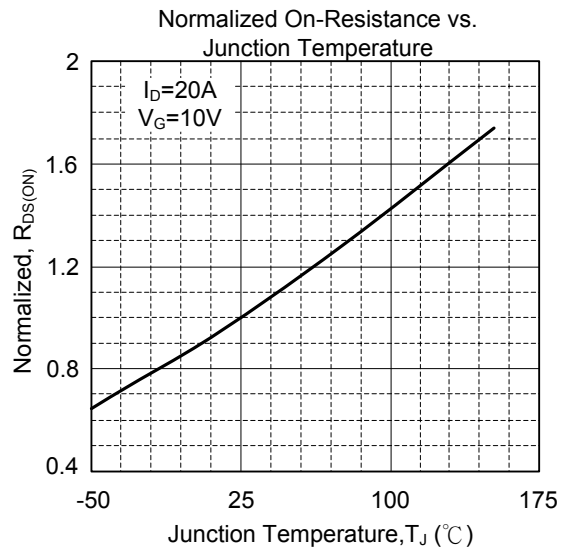
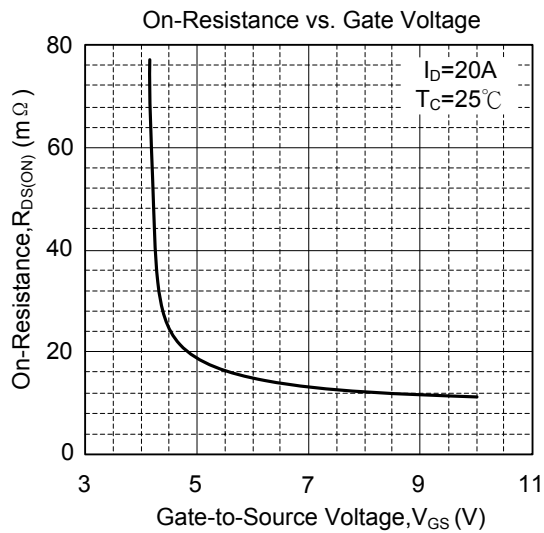
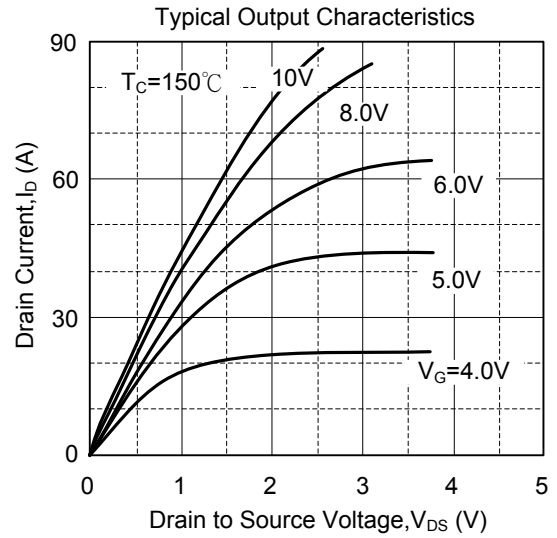
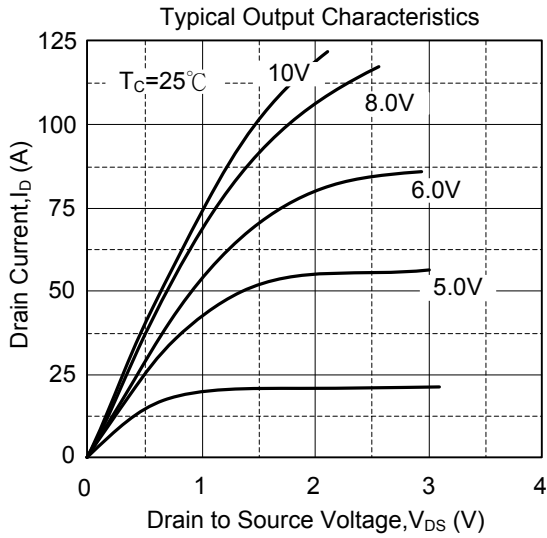
■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub> =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0 V, I <sub>D</sub> =250μA	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20 V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA		0.026		V/°C
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		3.0	V
Static Drain-Source On-Resistance(Note 1)	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A			12	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A			25	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		1135		pF
Output Capacitance	C <sub>OSS</sub>			200		
Reverse Transfer Capacitance	C <sub>RSS</sub>			135		
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A (Note 1)		11.6		nC
Gate Source Charge	Q <sub>GS</sub>			3.9		
Gate Drain Charge	Q <sub>GD</sub>			7		
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>D</sub> =0.75Ω, I <sub>D</sub> =20A, R <sub>G</sub> =3.3Ω (Note 1)		8.8		ns
Turn-ON Rise Time	t <sub>R</sub>			57.5		
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			18.5		
Turn-OFF Fall-Time	t <sub>F</sub>			6.4		
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Forward On Voltage (Note 1)	V <sub>SD</sub>	I <sub>S</sub> =45A, V <sub>GS</sub> =0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V, dI/dt=100A/μs		23.3		ns
Reverse Recovery Charge	Q <sub>rr</sub>				16	

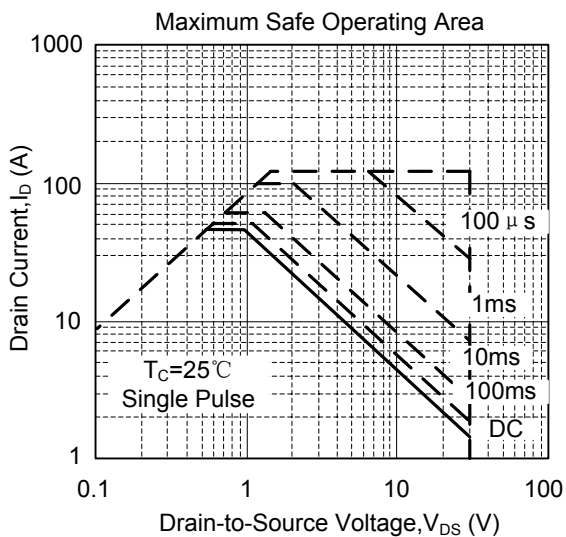
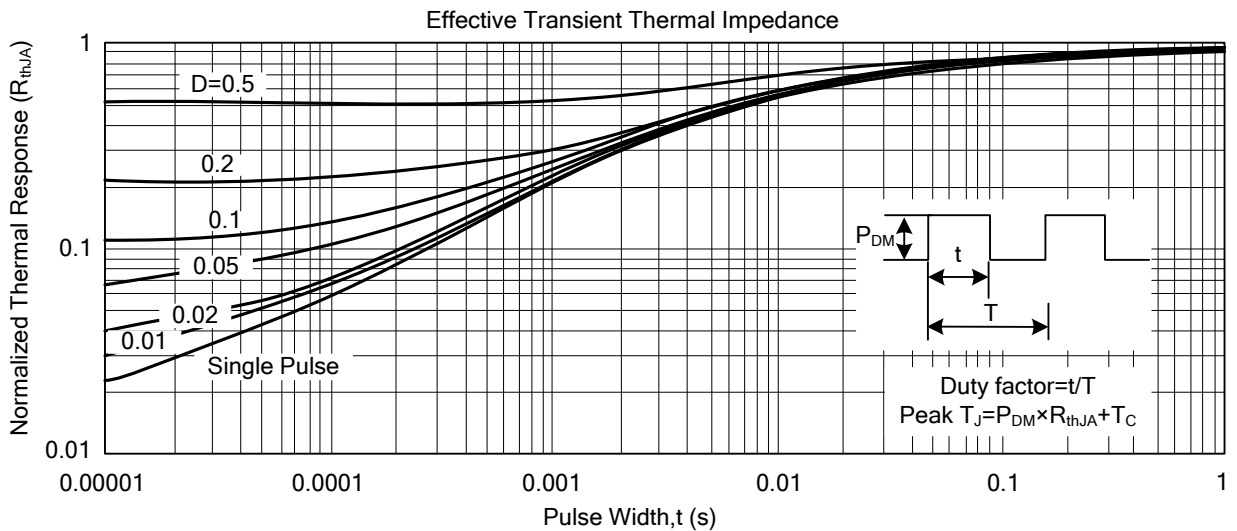
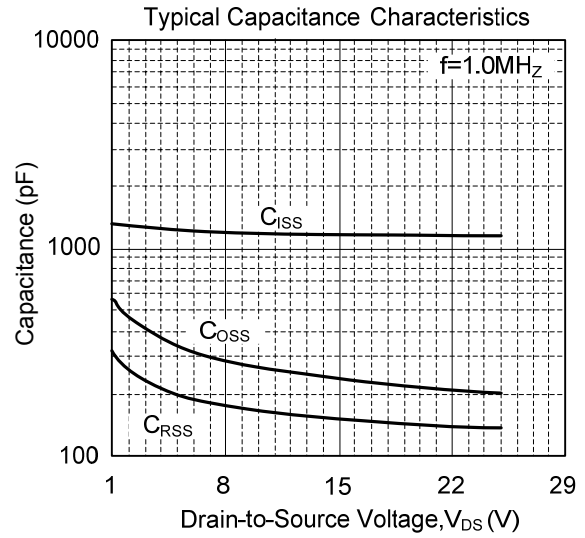
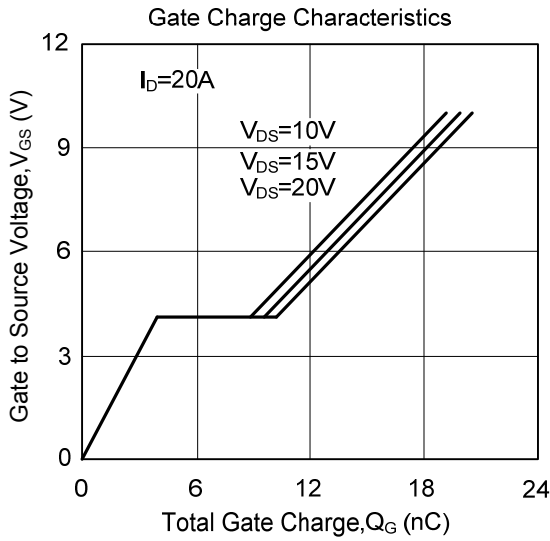
Note: 1. Pulse width ≤ 300us , duty cycle ≤ 2%.

2. Essentially independent of operating temperature

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS (Cont.)



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