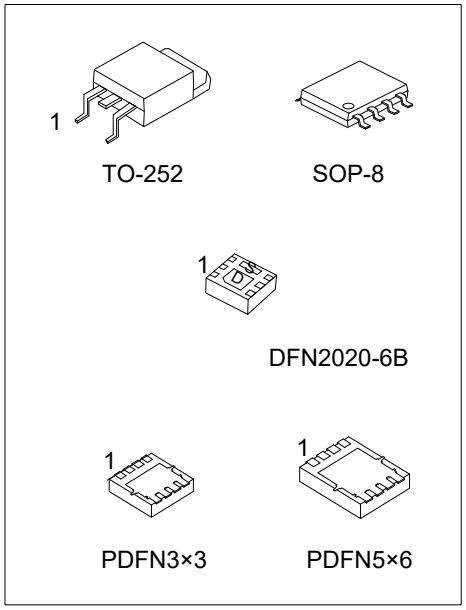
UT20N03

Power MOSFET

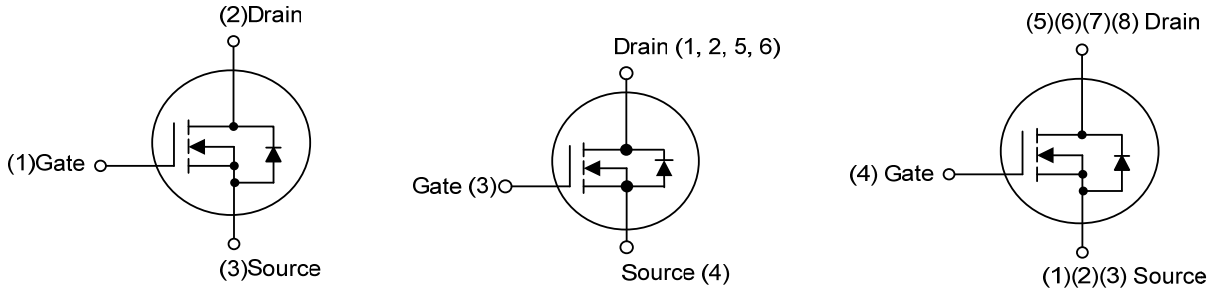
N-CHANNEL ENHANCEMENT MODE



■ FEATURES

* $R_{DS(ON)}$ ≤ 20 mΩ @ V_{GS}=10V, I_D =15A
  $R_{DS(ON)}$ ≤ 31 mΩ @ V_{GS}=4.5V, I_D =15A
* Low capacitance
* Optimized gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



TO-252 DFN2020-6B SOP-8/PDFN3×3/PDFN5×6

■ ORDERING INFORMATION

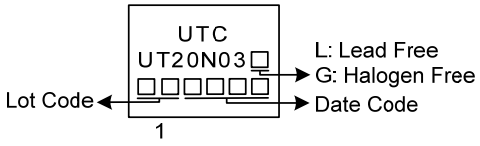
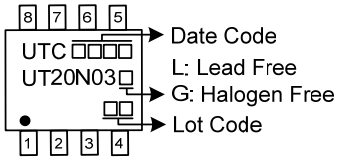
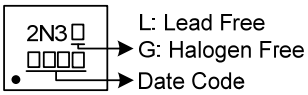
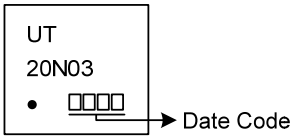
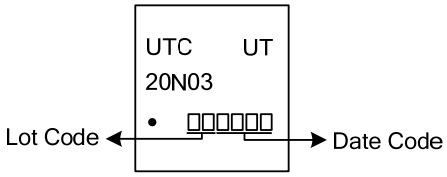
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT20N03L-TN3-R	UT20N03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT20N03L-S08-R	UT20N03G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT20N03L-K06B-2020-R	UT20N03G-K06B-2020-R	DFN2020-6B	D	D	G	S	D	D	-	-	Tape Reel
UT20N03L-P3030-R	UT20N03G-P3030-R	PDFN3×3	S	S	S	G	D	D	D	D	Tape Reel
UT20N03L-P5060-R	UT20N03G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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

UT20N03G-TN3-R
(1)Packing Type
(2)Packing Type
(3)Green Package

(1) R: Tape Reel
(2) TN3: TO-252, S08: SOP-8,
K06B-2020: DFN2020-6B
P3030: PDFN3×3, P5060: PDFN5×6
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

TO-252	SOP-8
	
DFN2020-6B	**PDFN3×3**
	
PDFN5×6	-
	-

■ 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	20	A
Pulsed Drain Current (Note 2)		I_{DM}	40	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	15	mJ
Power Dissipation	TO-252	P_D	30	W
	SOP-8		0.8	W
	DFN2020-6B		1.25	W
	PDFN3×3		16	W
	PDFN5×6		18	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 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. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. L = 0.5mH, I_{AS} = 7.8A, V_{DD} = 30V, R_G = 25Ω, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	θ_{JA}	50	°C/W
	SOP-8		125	°C/W
	DFN2020-6B		100	°C/W
	PDFN3×3		75	°C/W
	PDFN5×6		65	°C/W
Junction to Case	TO-252	θ_{JC}	4.16	°C/W
	SOP-8		110	°C/W
	DFN2020-6B		10.4	°C/W
	PDFN3×3		7.8	°C/W
	PDFN5×6		6.9	°C/W

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ 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	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=15A			20	mΩ
		V_{GS}=4.5V, I_D=15A			31	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} =25 V, V_{GS}=0V, f=1MHz		390		pF
Output Capacitance	C_{OSS}			110		
Reverse Transfer Capacitance	C_{RSS}			92		
SWITCHING CHARACTERISTICS						
Gate Charge Total	Q_G	V_{DS}=15V, V_{GS}=10V, I_D=10A, I_G=1mA (Note 1, 2)		16.6		nC
Gate-Source Charge	Q_{GS}			1.7		
Gate-Drain Charge	Q_{GD}			3.1		
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}=15V, V_{GS}=10V, I_D=10A, R_G=25Ω (Note 1, 2)		12		ns
Turn-On Rise Time	t_R			13		
Turn-Off Delay Time	$t_{D(OFF)}$			42		
Turn-Off Fall-Time	t_F			35		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				20	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				40	
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A		1.1	1.4	V

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.