



UT3416B

Preliminary

Power MOSFET

6.5A, 20V N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

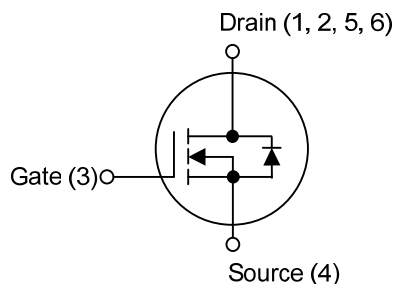
DESCRIPTION

The UTC **UT3416B** is advanced N-channel enhancement MOSFET which can provide the designer with the best combination of excellent $R_{DS(ON)}$, low gate charge and low gate voltages as low as 1.8V. When it is used as a load switch or in PWM application, the UTC **UT3416B** can be considered as an ideal.

FEATURES

- * $R_{DS(ON)} \leq 20 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=6.5\text{A}$
- $R_{DS(ON)} \leq 26 \text{ m}\Omega$ @ $V_{GS}=2.5\text{V}$, $I_D=5.5\text{A}$
- $R_{DS(ON)} \leq 36 \text{ m}\Omega$ @ $V_{GS}=1.8\text{V}$, $I_D=5.0\text{A}$

SYMBOL



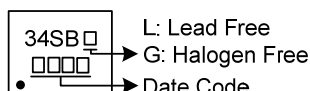
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT3416BL-K06B-2020-R	UT3416BG-K06B-2020-R	DFN2020-6B	D	D	G	S	D	D	Tape Reel

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

UT3416BG-K06B-2020-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) K06B-2020: DFN2020-6B (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	6.5	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
Power Dissipation (Note 3)	P_D	1.9	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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. Surface mounted on 1in^2 copper pad of FR4 board.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	65	$^{\circ}\text{C/W}$

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

■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, 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	20			V
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V, V _{DS} =16V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.6	1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6.5A		14	20	mΩ
		V _{GS} =2.5V, I _D =5.5A		20	26	mΩ
		V _{GS} =1.8V, I _D =5.0A		28	36	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =10V, f =1MHz		680		pF
Output Capacitance	C _{OSS}			240		pF
Reverse Transfer Capacitance	C _{RSS}			220		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =16V, V _{GS} =4.5V,I _D =6.5A		20		nC
Gate Source Charge	Q _{GS}			3		nC
Gate Drain Charge	Q _{GD}			7		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =10V, V _{GS} =4.5V, I _D =6.5A, R _G =3.3Ω		20		ns
Turn-ON Rise Time	t _R			27		ns
Turn-OFF Delay Time	t _{D(OFF)}			40		ns
Turn-OFF Fall-Time	t _F			28		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V		0.76	1	V

Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

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