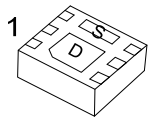
6.5A, 20V N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



DFN2020-6B

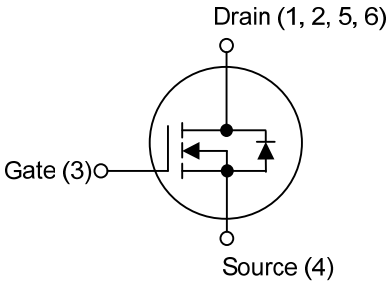
■ DESCRIPTION

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

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

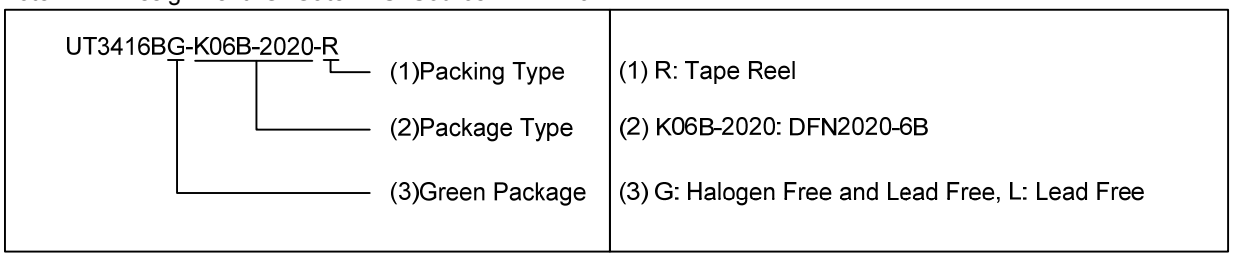
■ SYMBOL



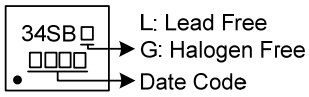
■ ORDERING INFORMATION

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



■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	±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	°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. Surface mounted on $1in^2$ copper pad of FR4 board.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	65	°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	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 ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.