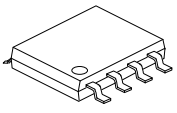
UT4392

Power MOSFET

15A, 30V N-CHANNEL POWER MOSFET



SOP-8

DFN2020-6B

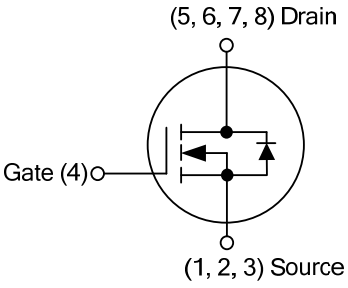
■ DESCRIPTION

The **UT4392** uses UTC advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for being used in such applications: high-Side DC/DC Conversion, notebook and sever.

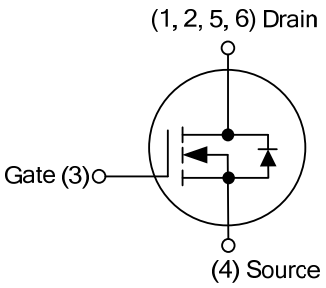
■ FEATURES

* $R_{DS(ON)}$ ≤ 11.5 mΩ @ V_{GS}=10V, I_D=12.5A
  $R_{DS(ON)}$ ≤ 16.5 mΩ @ V_{GS}=4.5V, I_D=10A
* High Density Cell Design for Ultra Low On-resistance

■ SYMBOL



SOP-8



DFN2020-6B

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT4392L-S08-R	UT4392G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT4392L-K06B-2020-R	UT4392G-K06B-2020-R	DFN2020-6B	D	D	G	S	D	D	-	-	Tape Reel

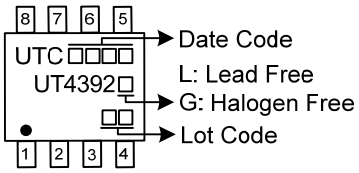
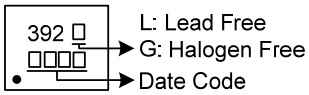
Note: Pin Assignment: G: Gate D: Drain S: Source

UT4392G-S08-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S08: SOP-8, K06B-2020: DFN2020-6B
(3) G: Halogen Free and Lead Free L: Lead Free

■ MARKING

SOP-8	DFN2020-6B
	

■ 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		I_D	12.5	A
Pulsed Drain Current		I_{DM}	50	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	3.6	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	1.2	V/ns
Power Dissipation	SOP-8	P_D	1.5	W
	DFN2020-8		2	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=0.1mH, I_{AS}=8.6A, V_{DD}=25V, R_G=25 Ω, Starting T_J = 25°C
4. I_{SD} ≤ 15A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ_{JA}	90	°C/W
	DFN2020-8		70	°C/W
Junction to Case	SOP-8	θ_{JC}	83	°C/W
	DFN2020-8		62.5	°C/W

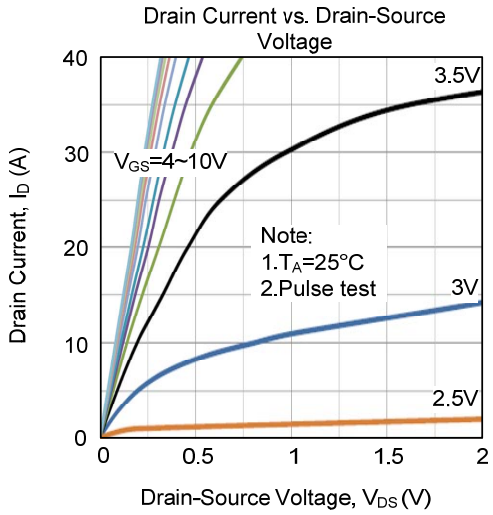
Notes: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

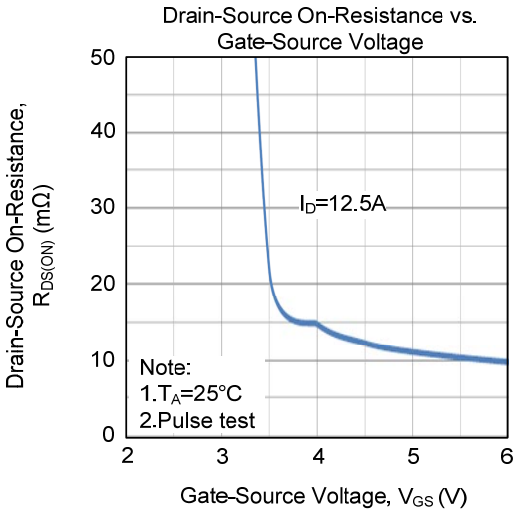
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified.)

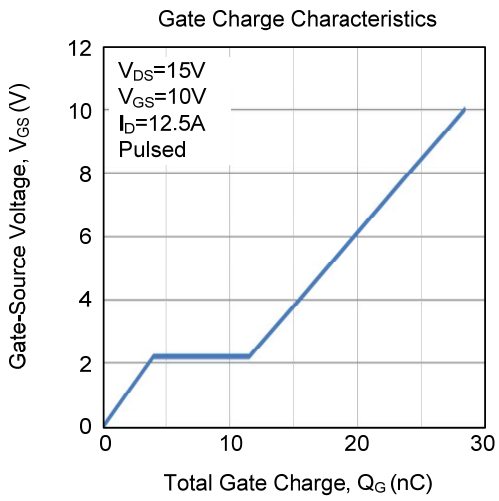
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.0		3.0	V
Static Drain-Source On-Resistance (Note 1)	$R_{DS(ON)}$	V_{GS}=10V, I_D=12.5A		8.2	11.5	mΩ
		V_{GS}=4.5V, I_D=10A		11.4	16.5	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1.0MHz (Note2)		717		pF
Output Capacitance	C_{OSS}			194		pF
Reverse Transfer Capacitance	C_{RSS}			165		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=24V, V_{GS}=10V, I_D=12.5A (Note2)		28		nC
Gate Source Charge	Q_{GS}			4		nC
Gate Drain Charge	Q_{GD}			7.5		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=15V, I_D=12.5A, V_{GS}=10V R_G=3.3Ω (Note3)		7		ns
Turn-ON Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			24		ns
Turn-OFF Fall-Time	t_F			23		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S	(Note 4,5)			12.5	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				50	A
Diode Forward Voltage	V_{SD}	I_S=2.7A, V_{GS}=0V			1.3	V
Reverse Recovery Time	t_{rr}	I_S=12.5A, V_{GS}=0V, dI/dt=100A/μs		274		ns
Reverse Recovery Charge	Q_{rr}			0.8		nC

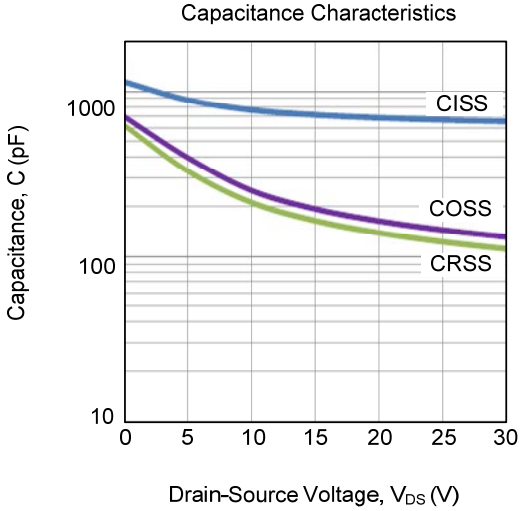
Notes: 1. Pulse Test: P_W ≤ 300μS, Duty Cycle ≤ 2%.
2. For DESIGN AID ONLY, not subject to production testing.
3. Switching time is essentially independent of operating temperature
4. Pulse width limited by the Maximum junction temperature.
5. Surface Mounted on FR4 Board, t ≤ 10 sec.

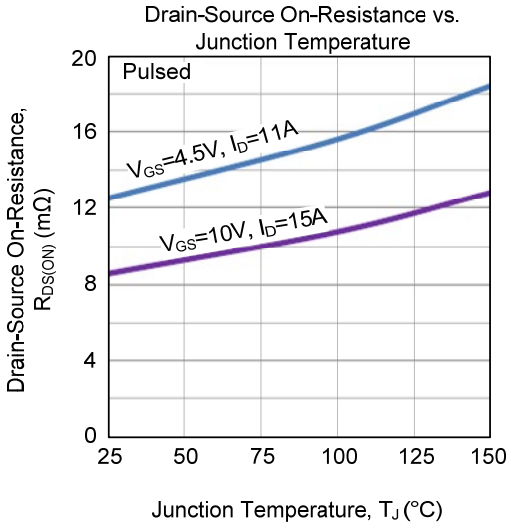
■ TYPICAL CHARACTERISTICS

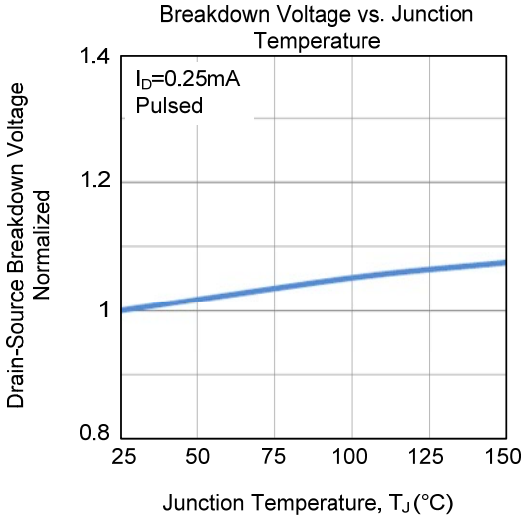






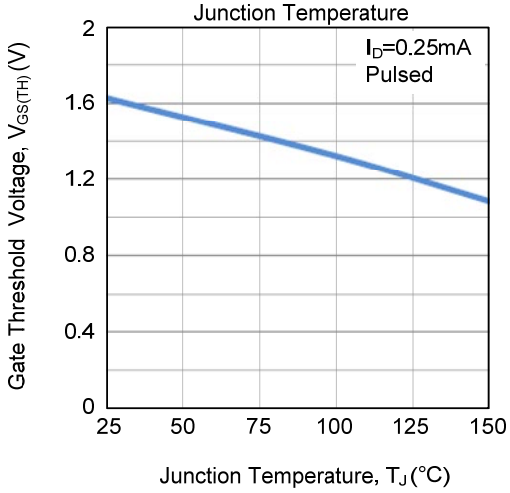




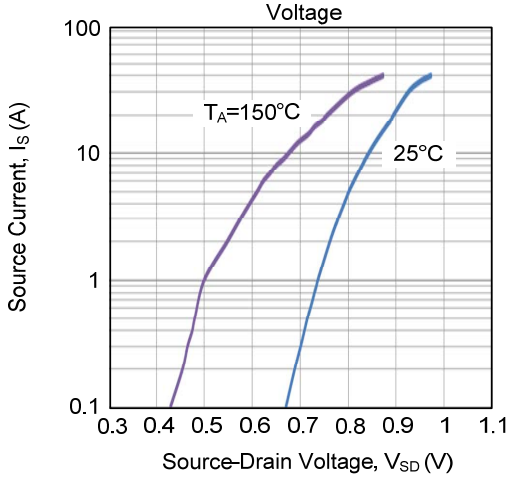


■ TYPICAL CHARACTERISTICS (Cont.)

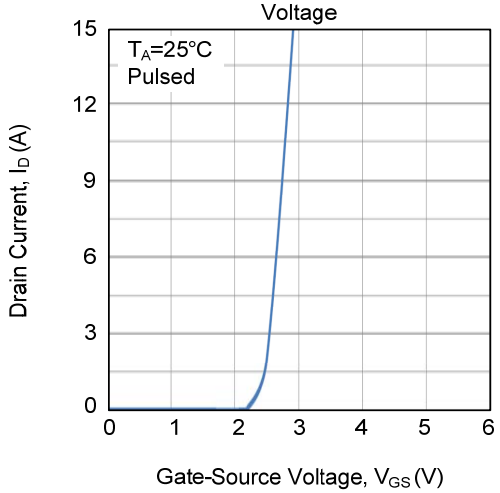
Gate Threshold Voltage vs. Junction Temperature



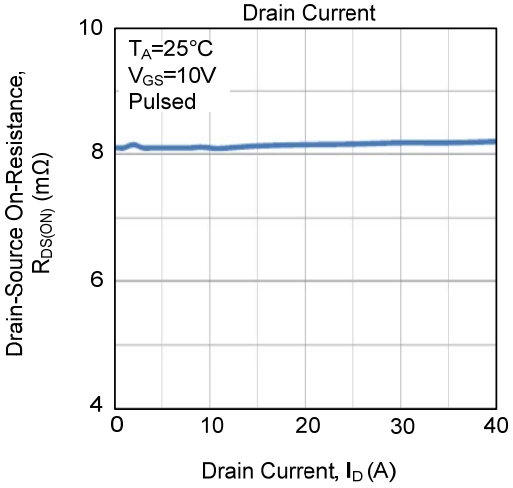
Source Current vs. Source-Drain Voltage



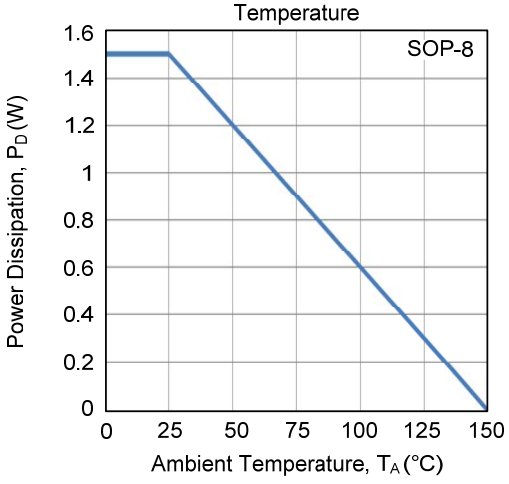
Drain Current vs. Gate-Source Voltage



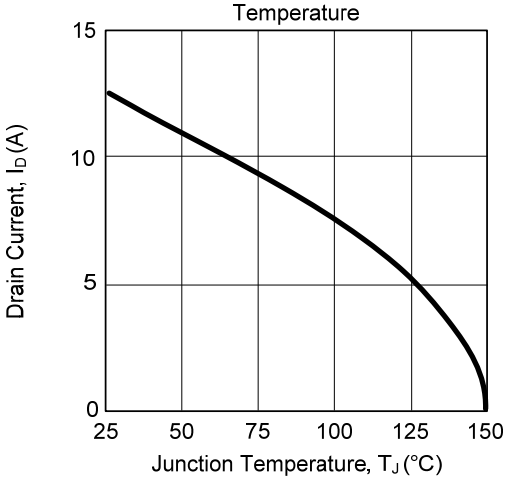
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)