

**UT7430**

Preliminary

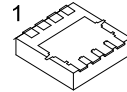
Power MOSFET**30V, 34A N-CHANNEL
ENHANCEMENT MODE
POWER MOSFET****DESCRIPTION**

The UTC **UT7430** is an N-Channel MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

The UTC **UT7430** is suitable for general purpose applications and high side switch in SMPS.

FEATURES

- * $R_{DS(ON)} < 12m\Omega$ @ $V_{GS}=10V$, $I_D=20A$
- * $R_{DS(ON)} < 16m\Omega$ @ $V_{GS}=4.5V$, $I_D=20A$
- * Low gate charge
- * High switching speed



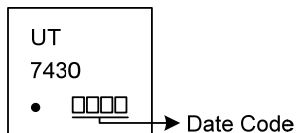
DFN3030-8

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT7430G-K08-3030-R	UT7430G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel

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

UT7430G-K08-3030-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) K08-3030: DFN3030-8
	(3)Green Package	(3) G: Halogen Free and Lead Free

MARKING

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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous	T _C =25°C	I _D	34	A
		T _C =100°C		21	A
	Pulsed (Note 3)		I _{DM}	80	A
Continuous Drain Current (Note 1)		T _A =25°C	I _{DSM}	13	A
		T _A =70°C		10.2	A
Avalanche Current (Note 3)			I _{AR}	22	A
Repetitive Avalanche Energy	L=0.1mH (Note 3)		E _{AR}	24	mJ
Power Dissipation (Note 2)	T _C =25°C		P _D	23	W
	T _C =100°C			9	W
Power Dissipation (Note 1)	T _A =25°C		P _{DSM}	3.1	W
	T _A =70°C			2	W
Junction Temperature			T _J	-55~+150	°C
Storage Temperature Range			T _{STG}	-55~+150	°C

Note: 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.

■ **THERMAL CHARACTERISTICS**

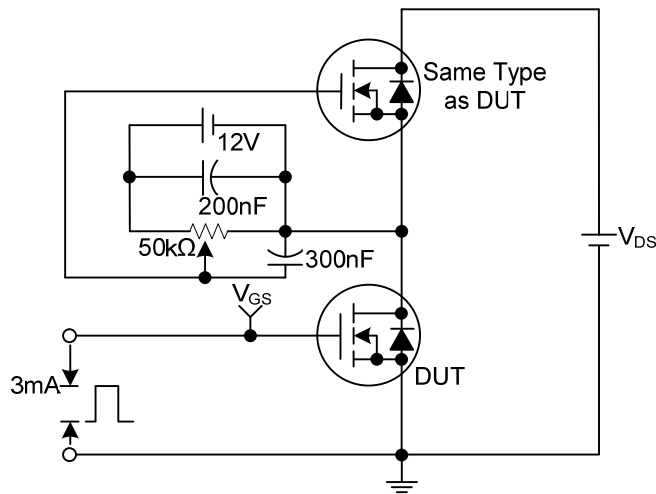
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 1)	θ_{JA}		60	75	$^\circ\text{C/W}$
Junction to Case (Note 2)	θ_{JC}		4.5	5.4	$^\circ\text{C/W}$

- Notes: 1. The value of θ_{JA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.
2. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.

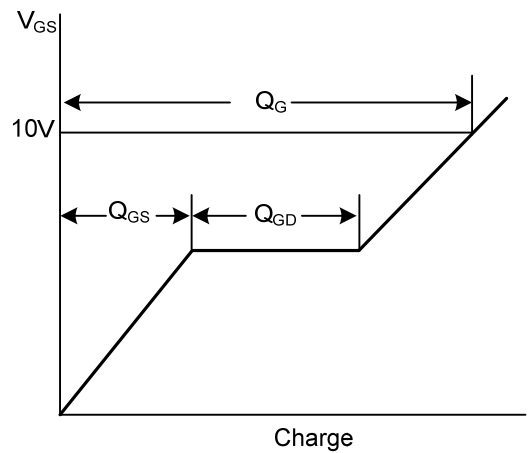
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	30			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.5	1.9	2.5	V
Static Drain-Source On-Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =20A		10	12	mΩ
			V _{GS} =4.5V, I _D =20A		13	16	mΩ
Forward Transconductance		g _{FS}	V _{DS} =5V, I _D =20A		45		S
On State Drain Current		I _{D(ON)}	V _{GS} =10V, V _{DS} =5V	80			A
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1.0MHz		780		pF
Output Capacitance		C _{OSS}			200		pF
Reverse Transfer Capacitance		C _{RSS}			165		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{GS} =4.5V, V _{DS} =15V, I _D =20A		15.2		nC
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =15V, I _D =20A		32.7		nC
Gate to Source Charge		Q _{GS}			7.6		nC
Gate to Drain Charge		Q _{GD}			7.2		nC
Turn-ON Delay Time		t _{D(ON)}	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω, R _{GEN} =3Ω		16		ns
Rise Time		t _R			33		ns
Turn-OFF Delay Time		t _{D(OFF)}			45		ns
Fall-Time		t _F			18		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				25	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =1A, V _{GS} =0V		0.7	1	V

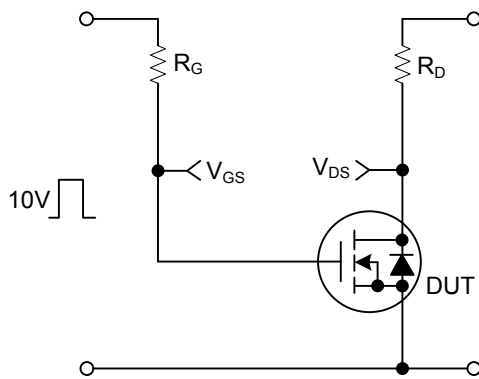
■ TEST CIRCUITS AND WAVEFORMS



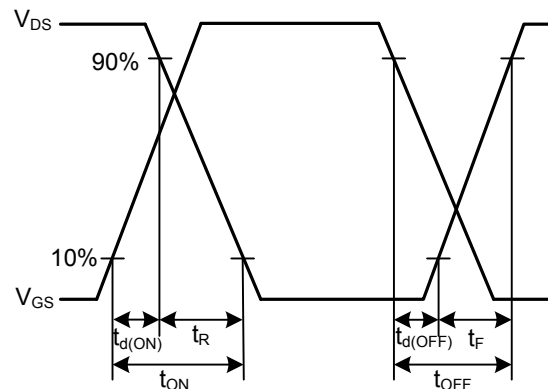
Gate Charge Test Circuit



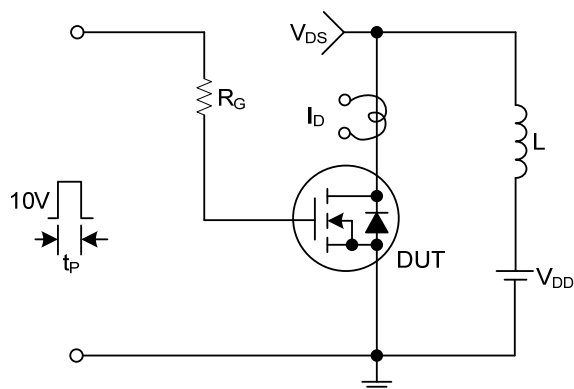
Gate Charge Waveforms



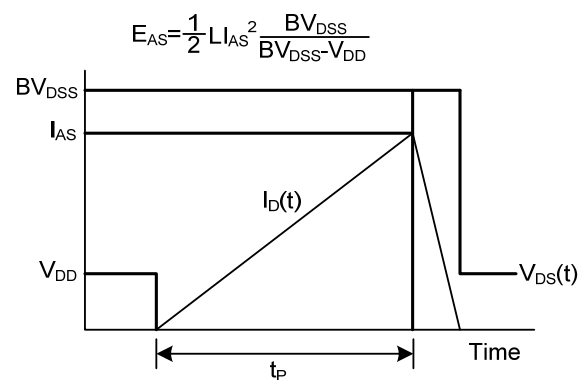
Resistive Switching Test Circuit



Resistive Switching Waveforms

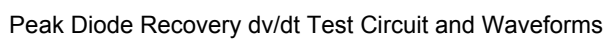


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

dv/dt controlled by R_G
 I_{SD} controlled by pulse period



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