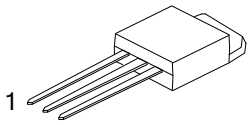
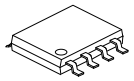
30A, 40V N-CHANNEL POWER MOSFET



TO-251



SOP-8

■ DESCRIPTION

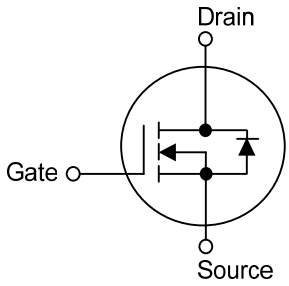
The UTC **UT30N04** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$ and high switching speed.

The UTC **UT30N04** is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts, etc.

■ FEATURES

* $R_{DS(ON)} \leq 13m\Omega$ @ V_{GS}=10V, I_D=15A
  $R_{DS(ON)} \leq 25m\Omega$ @ V_{GS}=4.5V, I_D=15A
* High Switching Speed

■ SYMBOL



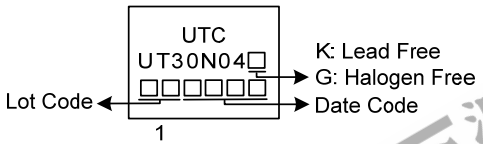
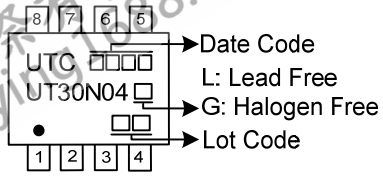
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT30N04L-TM3-T	UT30N04G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UT30N04L-S08-R	UT30N04G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UT30N04G-TM3-T (1)Packing Type	(1) T: Tube, R: Tape Reel
(2)Package Type	(2) TM3: TO-251, S08: SOP-8
(3)Green Package	(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

TO-251	SOP-8
	

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	40	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous (V_{GS}=10V)	I_D	30	A
	Pulsed (Note 2)	I_{DM}	60	A
Power Dissipation	TO-251	P_D	50	W
	SOP-8		2.5	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.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-251	θ_{JA}	110	°C/W
	SOP-8		62.5	°C/W
Junction to Case	TO-251	θ_{JC}	2.5	°C/W
	SOP-8		50 (Note)	°C/W

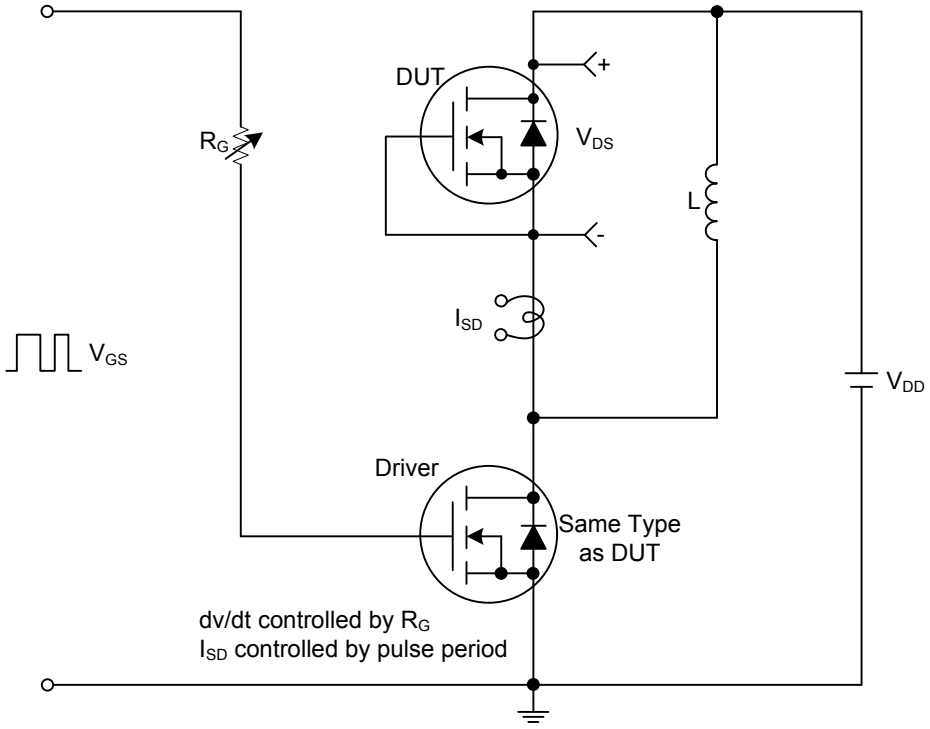
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

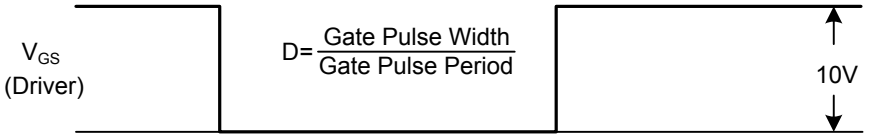
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

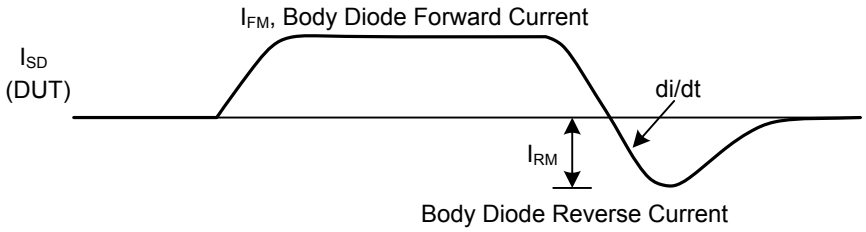
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	40			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=15A			13	mΩ
			V_{GS}=4.5V, I_D=15A			25	mΩ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S				30	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}				60	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=60A,V_{GS}=0V			1.4	V

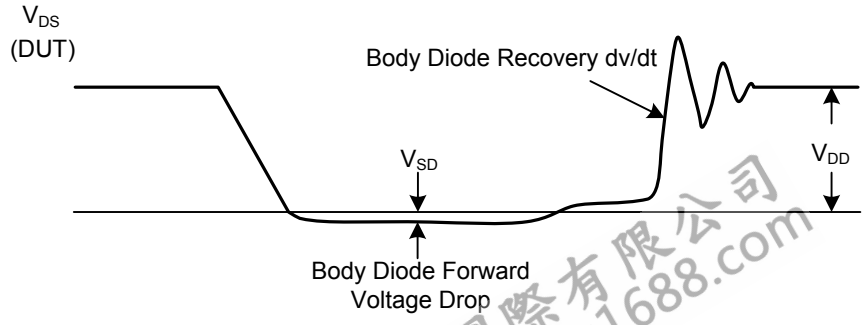
Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



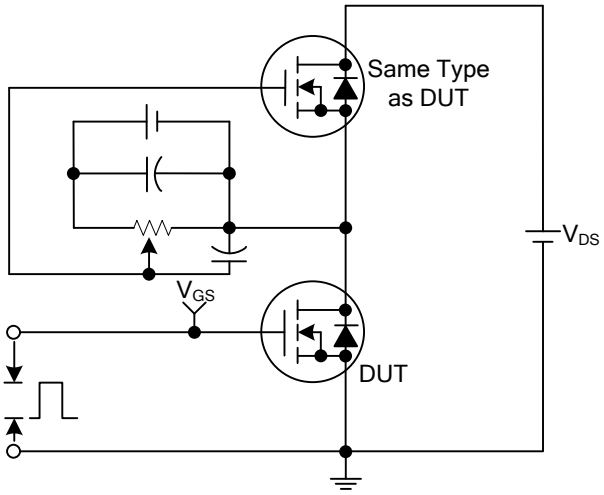




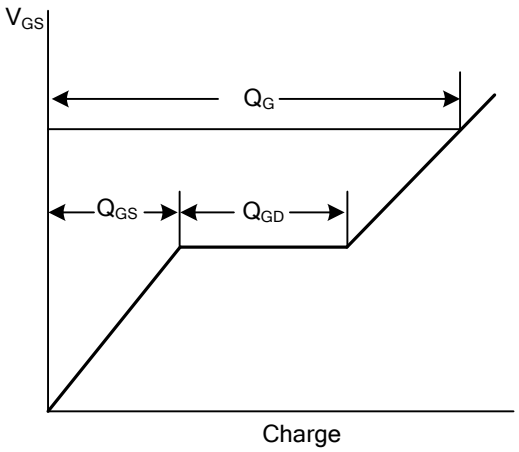


Peak Diode Recovery dv/dt Test Circuit and Waveforms

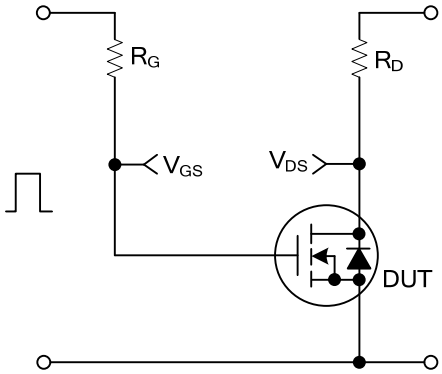
■ TEST CIRCUITS AND WAVEFORMS



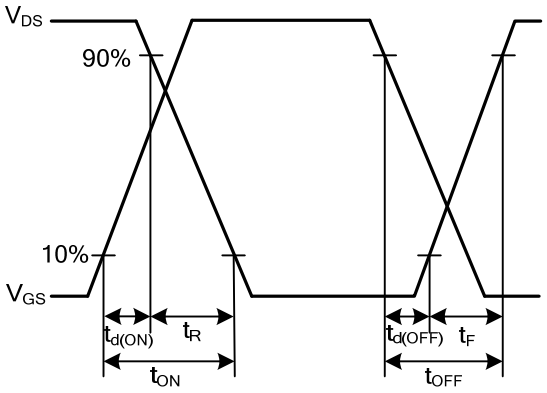
Gate Charge Test Circuit



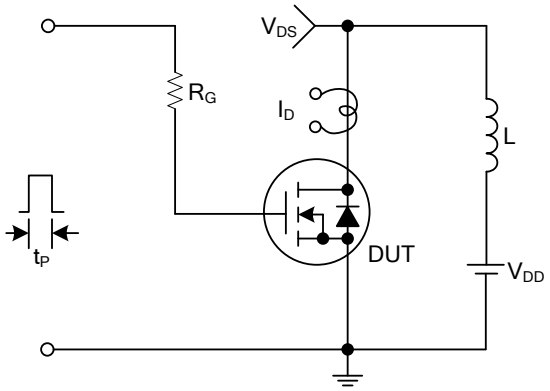
Gate Charge Waveforms



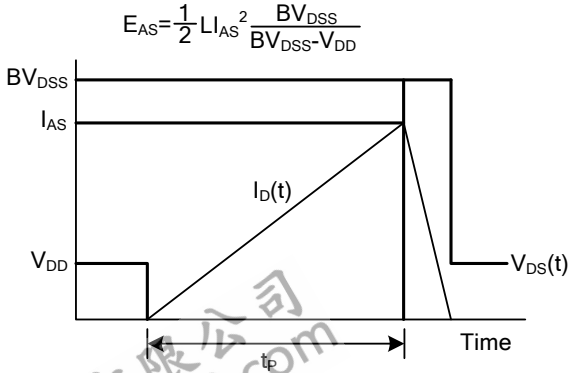
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms