



UT25N10

Power MOSFET

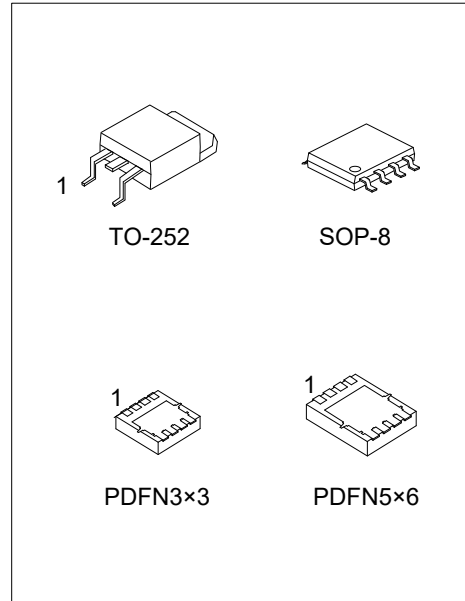
25A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

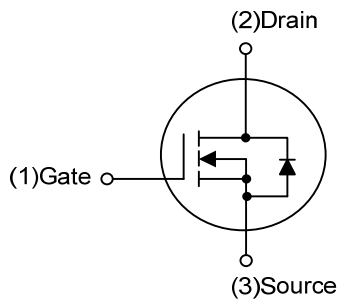
The UTC **UT25N10** is a N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

FEATURES

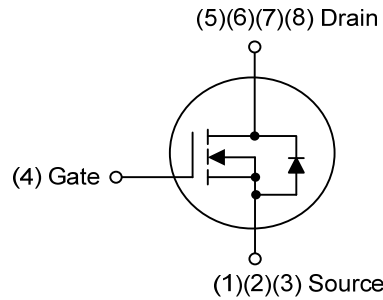
- * $R_{DS(ON)} \leq 60 \text{ m}\Omega @ V_{GS} = 10V, I_D = 10A$
- $R_{DS(ON)} \leq 75 \text{ m}\Omega @ V_{GS} = 4.5V, I_D = 10A$
- * Simple drive requirement



SYMBOL



TO-252



SOP-8 / PDFN3x3 / PDFN5x6

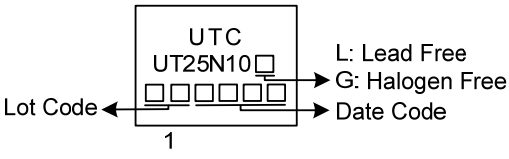
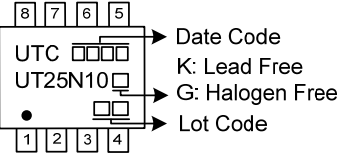
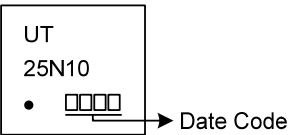
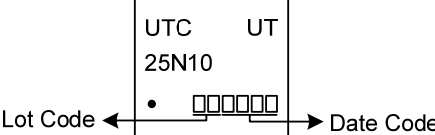
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT25N10L-TN3-R	UT25N10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT25N10L-S08-R	UT25N10G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT25N10L-P3030-R	UT25N10G-P3030-R	PDFN3x3	S	S	S	G	D	D	D	D	Tape Reel
UT25N10L-P5060-R	UT25N10G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT25N10G-TN3-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) TN3: TO-252, S08: SOP-8, P3030: PDFN3x3 P5060: PDFN5x6 (3) G: Halogen Free and Lead Free, K: Lead Free
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■ MARKING

TO-252	SOP-8
 <p>UTC UT25N10 □ □ □ □ □ □ □ 1</p> <p>Lot Code ←</p> <p>→ Date Code</p> <p>L: Lead Free G: Halogen Free</p>	 <p>8 7 6 5 UTC □ □ □ □ → Date Code UT25N10 □ → K: Lead Free □ □ → G: Halogen Free • □ □ → Lot Code 1 2 3 4</p>
PDFN3×3	PDFN5×6
 <p>UT 25N10 • □ □ □ → Date Code</p>	 <p>UTC UT 25N10 • □ □ □ □ □ → Date Code Lot Code ←</p>

■ ABSOLUTE MAXIMUM RATING (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	100	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	25	A
	Pulsed (Note 2)	I _{DM}	50	A
Power Dissipation	TO-252	P _D	44	W
	SOP-8		4.8	W
	PDFN3×3		20	W
	PDFN5×6		24	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	θ _{JA}	110	°C/W
	SOP-8		125	°C/W
	PDFN3×3		130	°C/W
	PDFN5×6		65	°C/W
Junction to Case	TO-252	θ _{JC}	2.85 (Note)	°C/W
	SOP-8		26 (Note)	°C/W
	PDFN3×3		6.25 (Note)	°C/W
	PDFN5×6		5.2 (Note)	°C/W

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

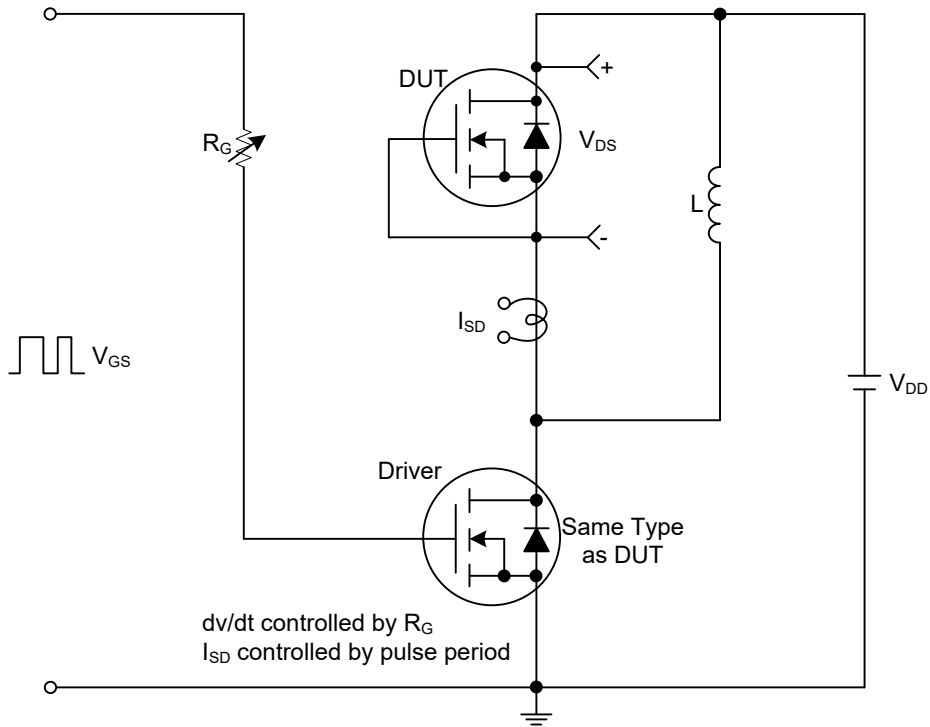
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A			60	mΩ
		V _{GS} =4.5V, I _D =10A			75	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f =1.0MHz		1550		pF
Output Capacitance	C _{OSS}			110		pF
Reverse Transfer Capacitance	C _{RSS}			90		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =50V, V _{GS} =10V, I _D =25A (Note 1, 2)		50		nC
Gate Source Charge	Q _{GS}			8		nC
Gate Drain Charge	Q _{GD}			14		nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{DD} =50V, V _{GS} =10V, I _D =25A, R _G =3Ω (Note 1, 2)		8		ns
Turn-ON Rise Time	t _R			16		ns
Turn-OFF Delay Time	t _{D(OFF)}			19		ns
Turn-OFF Fall-Time	t _F			18		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				25	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				50	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =25A, V _{GS} =0V			1.4	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =25A, V _{GS} =0V,		106		ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μs		131		nC

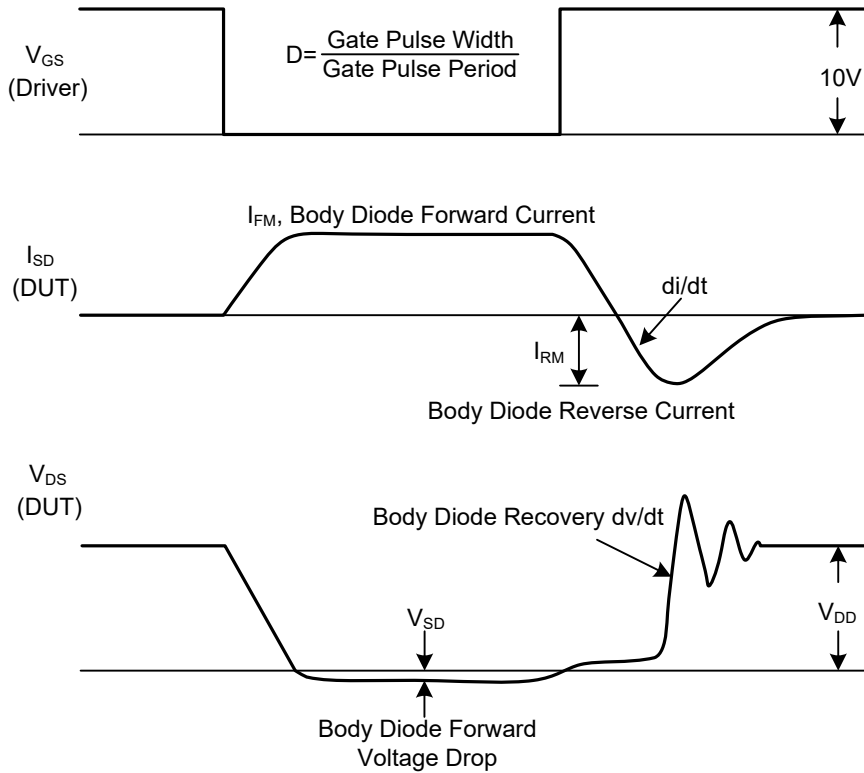
Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating ambient temperature.

TEST CIRCUITS AND WAVEFORMS



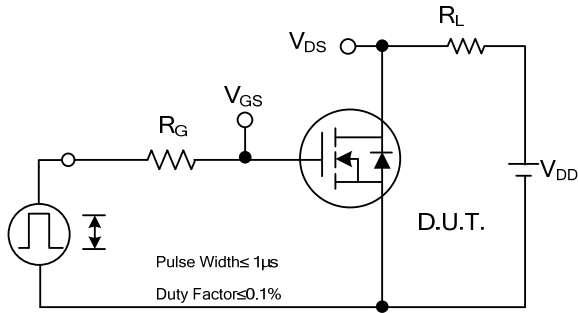
Peak Diode Recovery dv/dt Test Circuit



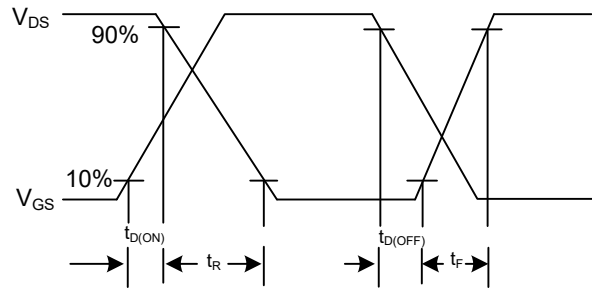
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

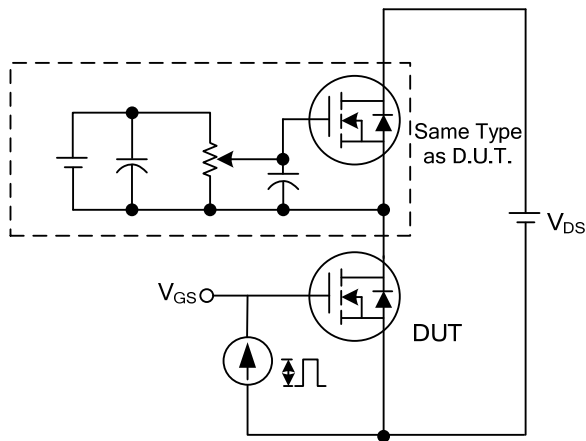
TEST CIRCUITS AND WAVEFORMS



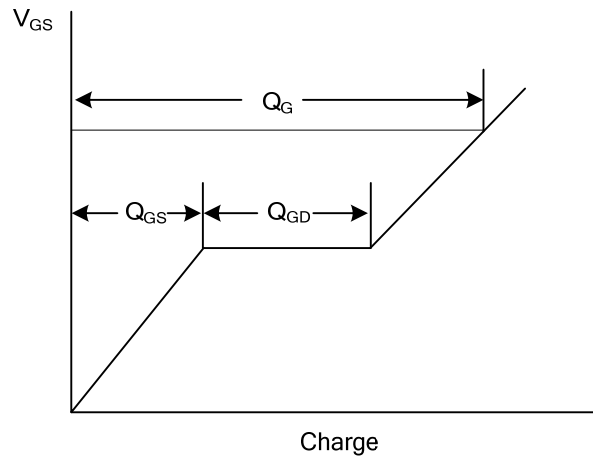
Switching Test Circuit



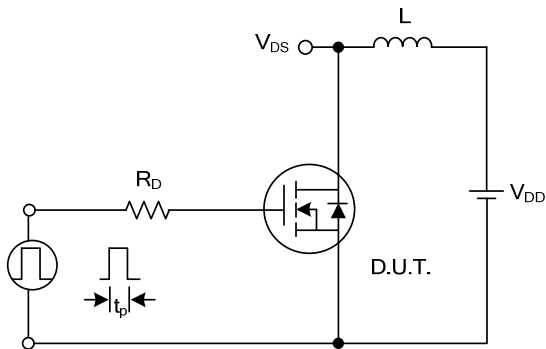
Switching Waveforms



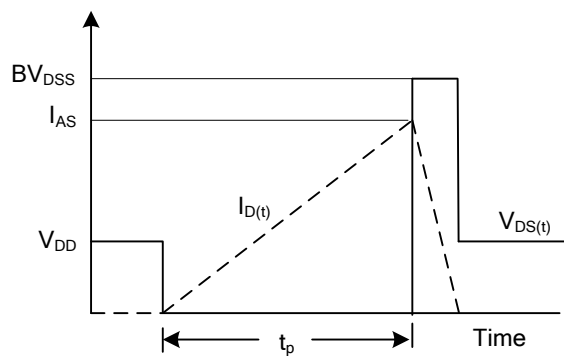
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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