



6.0A, 1000V N-CHANNEL SUPER-JUNCTION MOSFET

DESCRIPTION

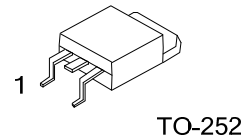
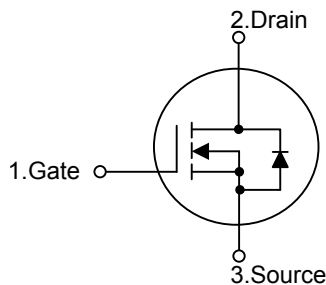
The UTC **6NM100** is an Super Junction MOSFET Structure. It uses UTC advanced planar stripe, DMOS technology to provide customers perfect switching performance, minimal on-state resistance.

The UTC **6NM100** is universally applied in electronic lamp ballasts based on half bridge topology, high efficiency switched mode power supplies, active power factor correction, etc.

FEATURES

- * $R_{DS(ON)} \leq 1.75 \Omega$ @ $V_{GS}=10V$, $I_D=3.0A$
- * High switching speed
- * High breakdown voltage

SYMBOL



TO-252

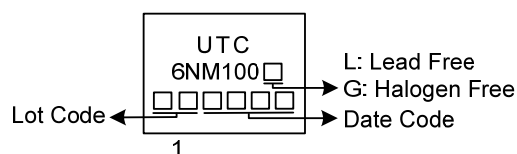
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
6NM100L-TN3-R	6NM100G-TN3-R	TO-252	G	D	S	Tape Reel

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

6NM100G-TN3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) TN3: TO-252
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	1000	V
Drain-Gate Voltage		V_{DGR}	1000	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	Continuous	I_D	6	A
	Pulsed	I_{DM}	12	A
Peak Diode Recovery dv/dt (Note 3)		dv/dt	2.3	V/ns
Power Dissipation		P_D	36	W
Junction Temperature		T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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. $I_{SD} \leq 6.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	110	$^{\circ}\text{C}/\text{W}$
Junction to Case	θ_{JC}	3.5 (Note)	$^{\circ}\text{C}/\text{W}$

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

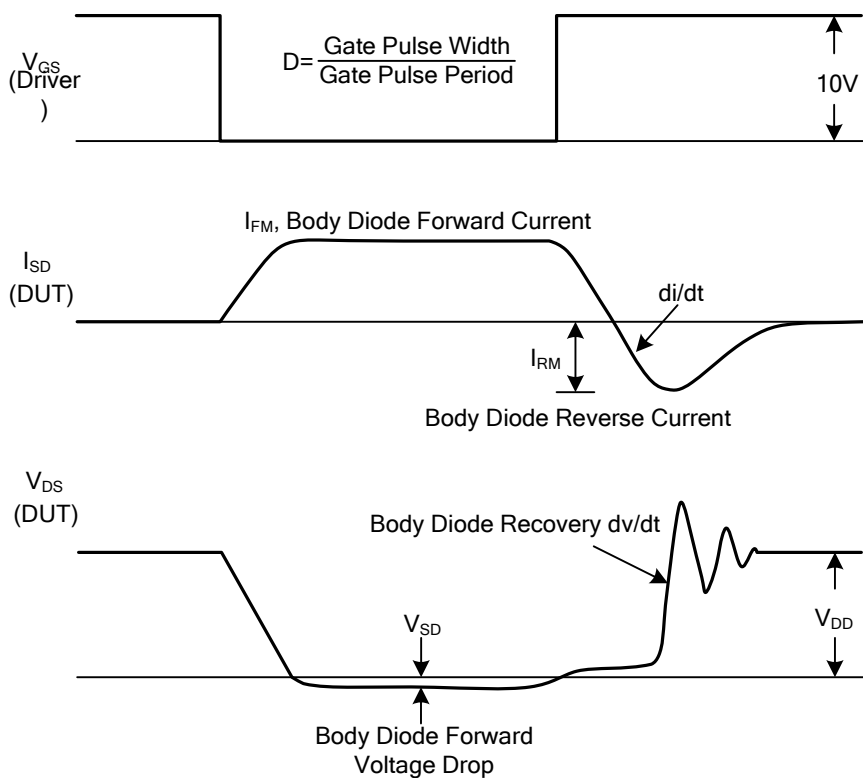
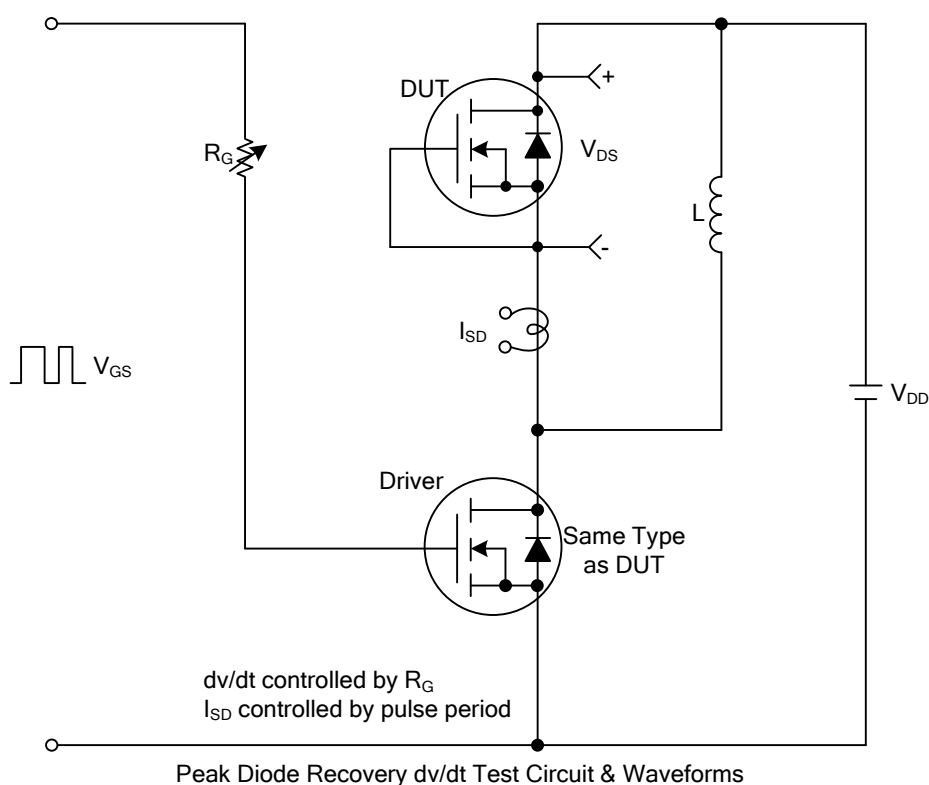
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =0.25mA, V _{GS} =0V, T _J =25°C	1000			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =1000V, V _{GS} =0V, T _J =25°C			10	μA
			V _{DS} =1000V, V _{GS} =0V, T _C =125°C			100	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+30V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-30V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.5		4.5	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =3.0A			1.75	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		540		pF
Output Capacitance		C _{OSS}			162		pF
Reverse Transfer Capacitance		C _{RSS}			8.2		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =800V, V _{GS} =10V, I _D =6.0A, (Note 1,2)		28		nC
Gate to Source Charge		Q _{GS}			9		nC
Gate to Drain Charge		Q _{GD}			9.2		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =100V, V _{GS} =10V, I _D =6.0A, R _G =25Ω (Note 1,2)		8		ns
Rise Time		t _R			19		ns
Turn-OFF Delay Time		t _{D(OFF)}			67		ns
Fall-Time		t _F			43		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S	T _C =25°C			6	A
Maximum Body-Diode Pulsed Current		I _{SM}	T _C =25°C			12	A
Drain-Source Diode Forward Voltage		V _{SD}	I _F =6.0A, V _{GS} =0V			1.4	V
Reverse Recovery Time		t _{rr}	I _S =6.0A, V _{GS} =0V,		512		ns
Reverse Recovery Charge		Q _{rr}	dI _F /dt=100A/μs (Note 1)		5.2		μC

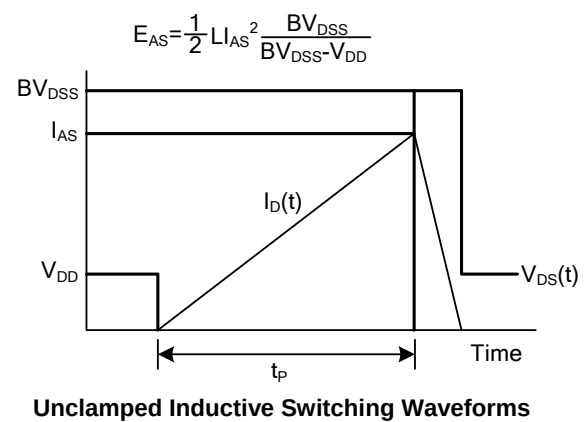
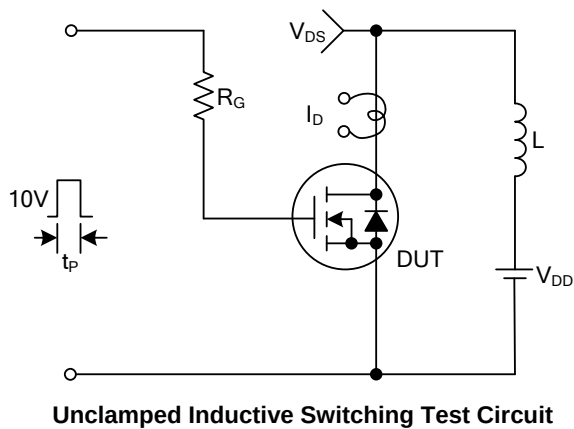
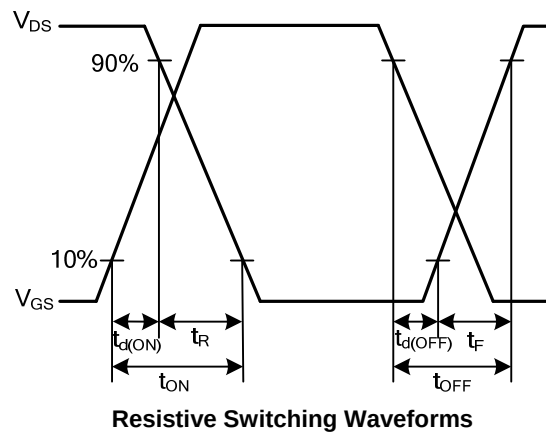
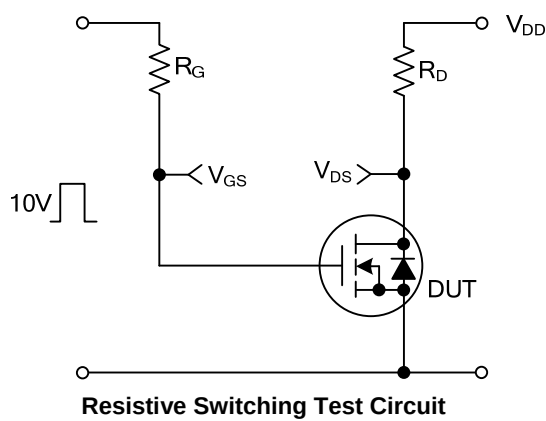
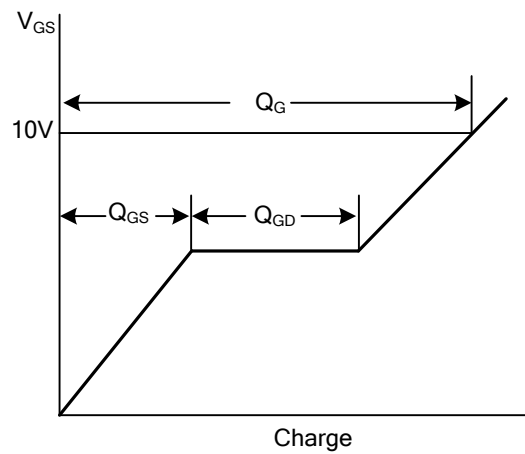
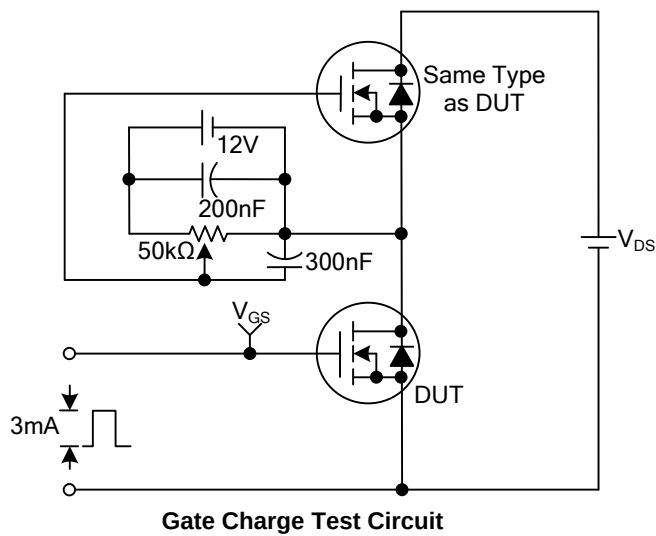
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS(Cont.)



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