



UT6354

Power MOSFET

-4.0A, -60V P-CHANNEL SILICON MOSFET

DESCRIPTION

The UTC **UT6354** is a P-Channel Silicon MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low gate charge, etc.

The UTC **UT6354** is suitable for general-purpose switching device applications.

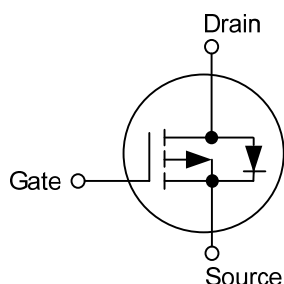
FEATURES

* $R_{DS(ON)} \leq 105 \text{ m}\Omega$ @ $V_{GS} = -10\text{V}$, $I_D = -2.0\text{A}$

$R_{DS(ON)} \leq 145 \text{ m}\Omega$ @ $V_{GS} = -4.5\text{V}$, $I_D = -1.0\text{A}$

* Low gate charge

SYMBOL



ORDERING INFORMATION

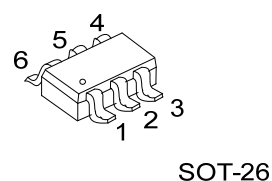
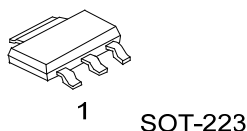
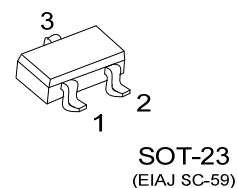
Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT6354L-AA3-R	UT6354G-AA3-R	SOT-223	G	D	S	-	-	-	Tape Reel
UT6354L-AE3-R	UT6354G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT6354L-AG6-R	UT6354G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

UT6354G-AA3-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) AA3: SOT-223, AE3: SOT-23, AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-223	SOT-23	SOT-26
 L: Lead Free G: Halogen Free Date Code	 L: Lead Free G: Halogen Free	 L: Lead Free G: Halogen Free



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	-4	A
	Pulsed (Note 2)	I_{DM}	-16	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	11.25	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.6	V/ns
Power Dissipation	SOT-223	P_D	1.5	W
	SOT-23/SOT-26		1	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +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. $L = 0.1\text{mH}$, $I_{AS} = -15\text{A}$, $V_{DD} = -50\text{V}$, $R_G = 25\ \Omega$ Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq -4.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	θ_{JA}	83	$^\circ\text{C}/\text{W}$
	SOT-23/SOT-26		125	$^\circ\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate, $t \leq 10\text{ sec}$.

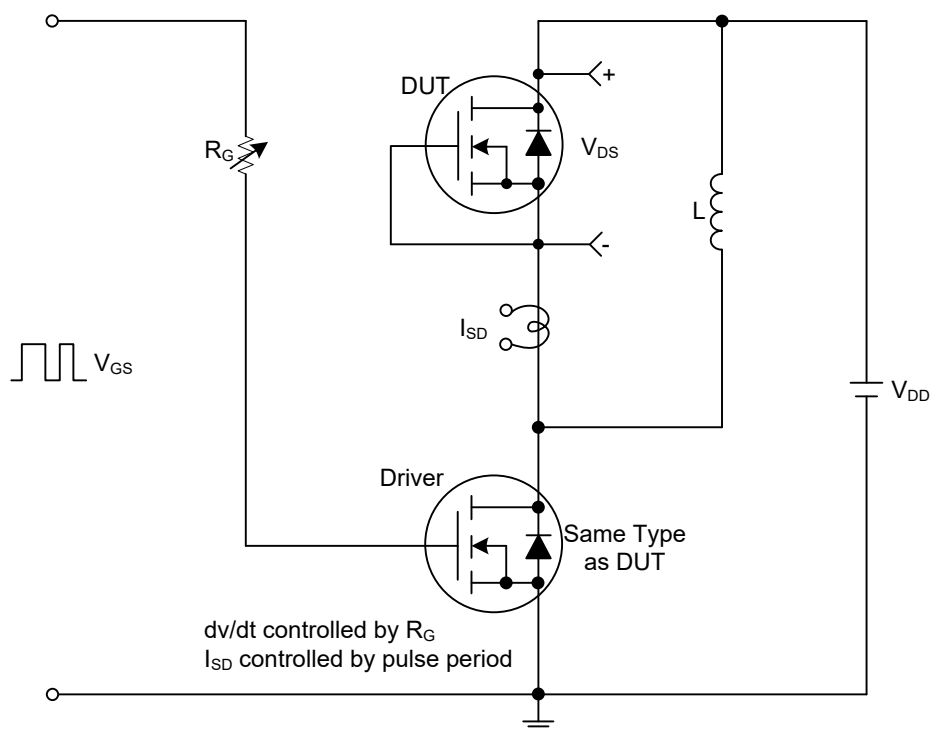
■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-1mA, V _{GS} =0V	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Cutoff Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0		-2.5	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-2.0A		90	105	mΩ
		V _{GS} =-4.5V, I _D =-1.0A		125	145	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-20V, V _{GS} =0V, f=1.0MHz		800		pF
Output Capacitance	C _{OSS}			60		pF
Reverse Transfer Capacitance	C _{RSS}			45		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =-48V, V _{GS} =-10V, I _D =-4.0A, I _G =-1mA		20		nC
Gate to Source Charge	Q _{GS}			3.3		nC
Gate to Drain Charge	Q _{GD}			5		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =-30V, V _{GS} =-10V, I _D =-4.0A, R _G =3Ω		6		ns
Rise Time	t _R			16		ns
Turn-OFF Delay Time	t _{D(OFF)}			30		ns
Fall-Time	t _F			18		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	I _S =-4.0A, V _{GS} =0V		-0.9	-1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =-4.0A, V _{GS} =0V,		25		ns
Reverse Recovery Charge	Q _{rr}	dI _F /dt=100A/μs (Note 1)		18		ns

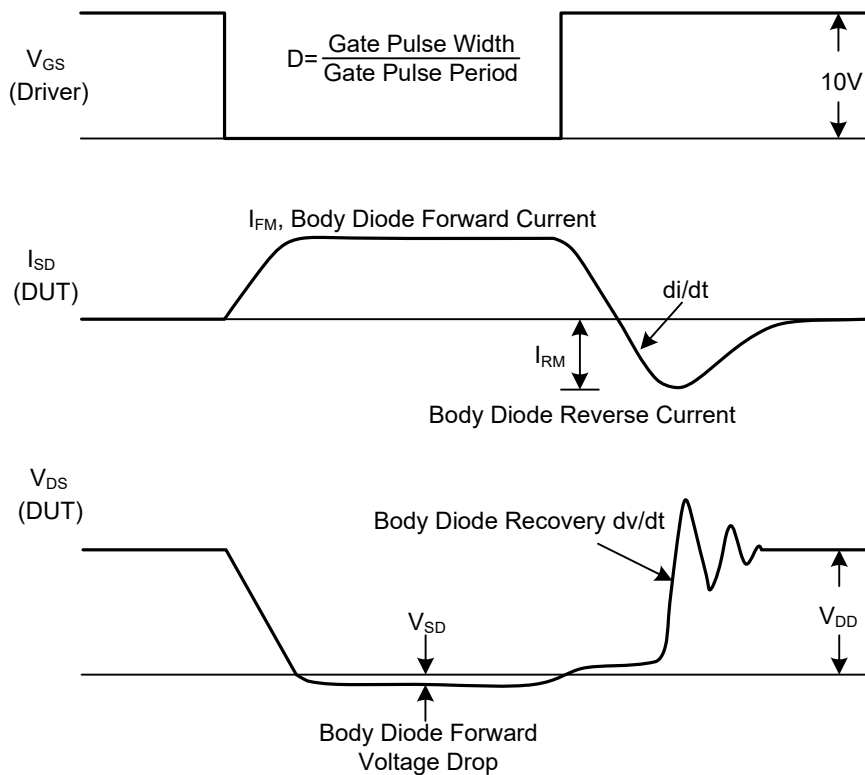
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



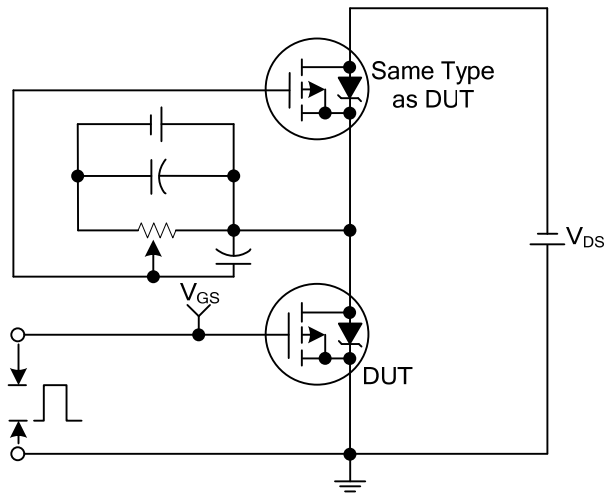
Peak Diode Recovery dv/dt Test Circuit



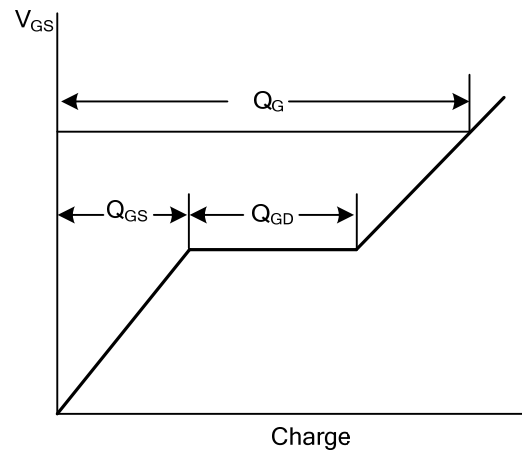
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

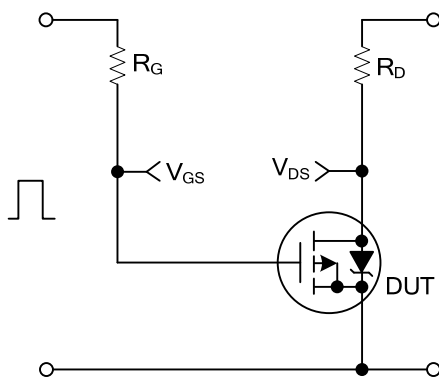
■ TEST CIRCUITS AND WAVEFORMS



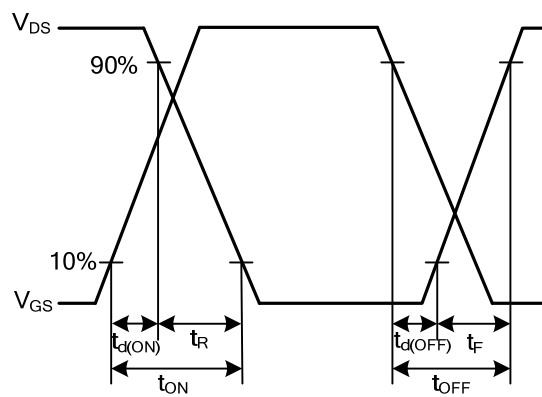
Gate Charge Test Circuit



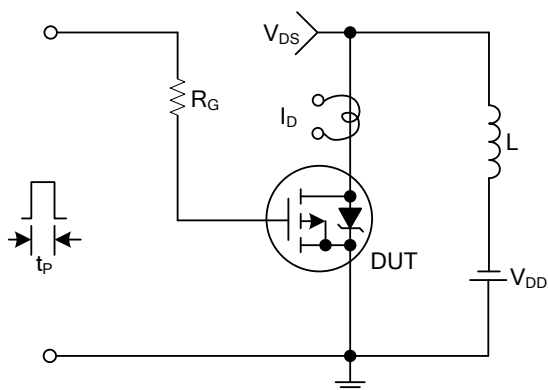
Gate Charge Waveforms



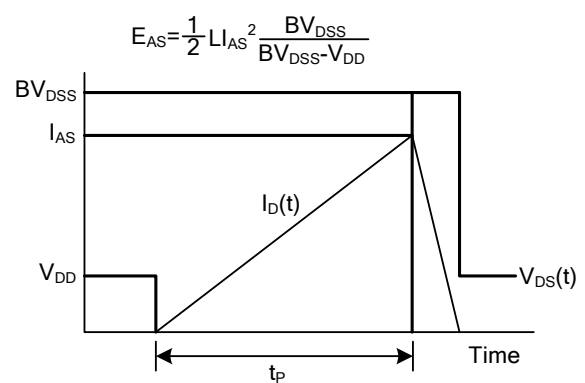
Resistive Switching Test Circuit



Resistive Switching Waveforms

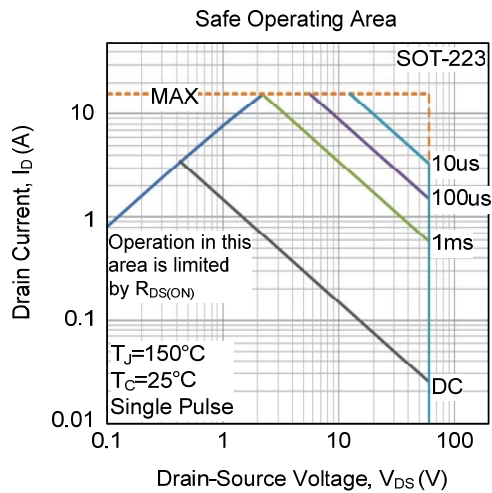


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



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