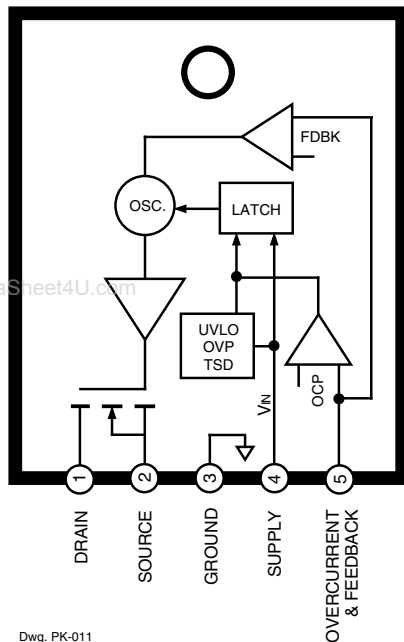


STR-G6651

OFF-LINE QUASI-RESONANT FLYBACK SWITCHING REGULATOR



Dwg. PK-011

ABSOLUTE MAXIMUM RATINGS at $T_A = +25^\circ\text{C}$

Control Supply Voltage, V_{IN}	35 V
Drain-Source Voltage, V_{DS}	650 V
Drain Current, I_D	
continuous	2.7 A
single-pulse, $t_w \leq 1 \text{ ms}$	7.2 A
Avalanche Energy, E_{AS}	
single-pulse	158 mJ
Over-Current Protection Voltage Range,	
V_{OCP}	-0.3 V to +6 V
Insulation RMS Voltage,	
$V_{WM(RMS)}$	2000 V
Package Power Dissipation, P_D	
control ($V_{IN} \times I_{IN(ON)}$)	0.8 W
total	See Graph
FET Channel Temperature, T_J ...	+150°C
Internal Frame Temperature, T_F ..	+125°C
Operating Temperature Range,	
T_A	-20°C to +125°C
Storage Temperature Range,	
T_S	-40°C to +125°C

The STR-G6651 is specifically designed to satisfy the requirements for increased integration and reliability in off-line quasi-resonant flyback converters. This device incorporates the primary control and drive circuit with a discrete avalanche-rated power MOSFET.

Cycle-by-cycle current limiting, under-voltage lockout with hysteresis, over-voltage protection, and thermal shutdown protects the power supply during the normal overload and fault conditions. Over-voltage protection and thermal shutdown are latched after a short delay. The latch may be reset by cycling the input supply. Low-current startup and a low-power standby mode selected from the secondary circuit completes a comprehensive suite of features. The device is provided in a five-pin over-molded TO-220 style package, affording dielectric isolation without compromising thermal characteristics. Two lead forms are available (with and without the suffix '-LF') to accommodate printed wiring board layout or mechanical constraints.

Proven in substantial volumes, the STR-G6651 is a robust low-risk solution for off-line power supplies particularly where management of EMI at the source is a significant element of the system design.

FEATURES

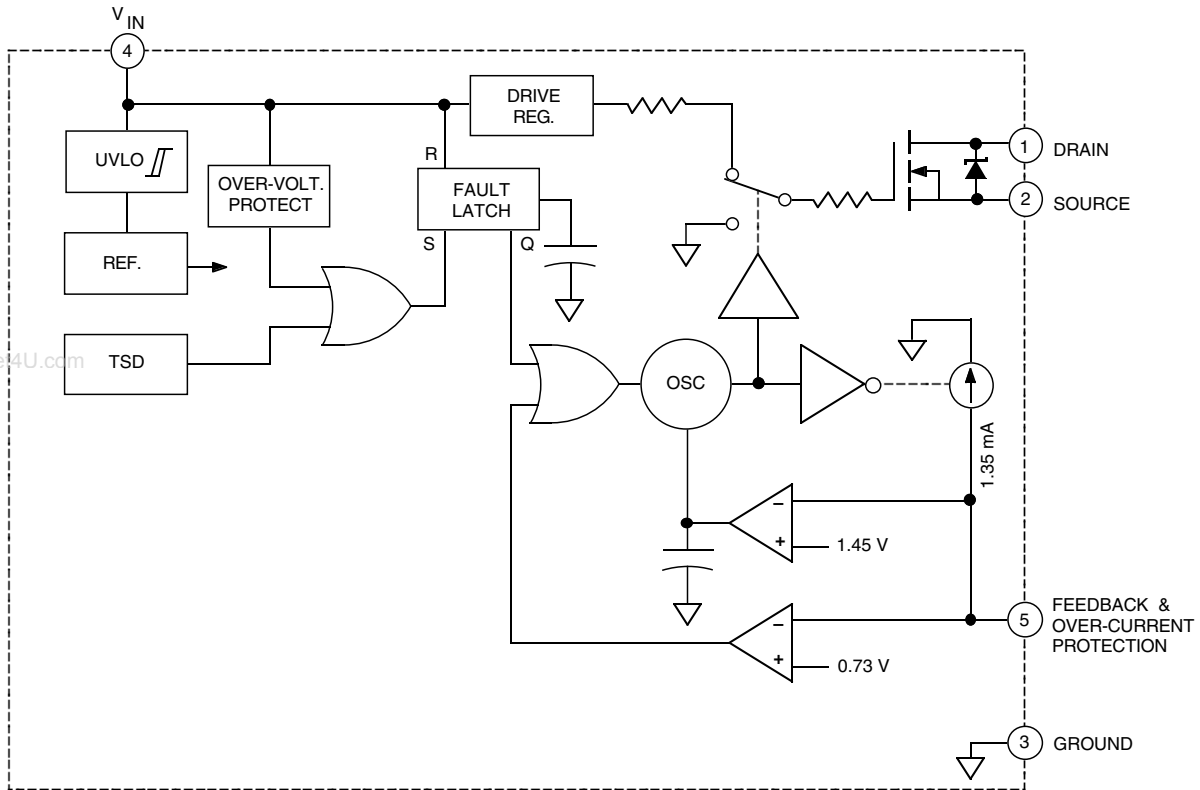
- Quasi-Resonant Operation
- Output Power to 66 W
- Low-Loss, Pulse-Ratio-Control Standby Mode
- Temperature-Compensated Pulse-by-Pulse Over-Current Protection
- Latched Over-Voltage and Thermal Protection
- Under-Voltage Lockout with Hysteresis
- Active Low-Pass Filter for Enhanced Light-Load Stability
- Switched Attenuation of Leading-Edge Current-Sensing Signal
- Regulated Soft Gate Drive
- Adjustable Switching Speed for EMI Control
- Overmolded Five-Pin Package

Always order by complete part number: **STR-G6651**.

STR-G6651

OFF-LINE QUASI-RESONANT FLYBACK SWITCHING REGULATOR

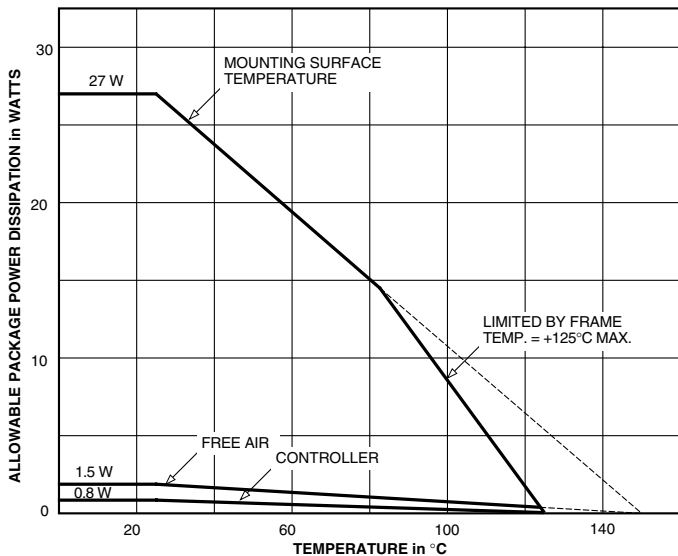
FUNCTIONAL BLOCK DIAGRAM



Dwg. FK-002-5

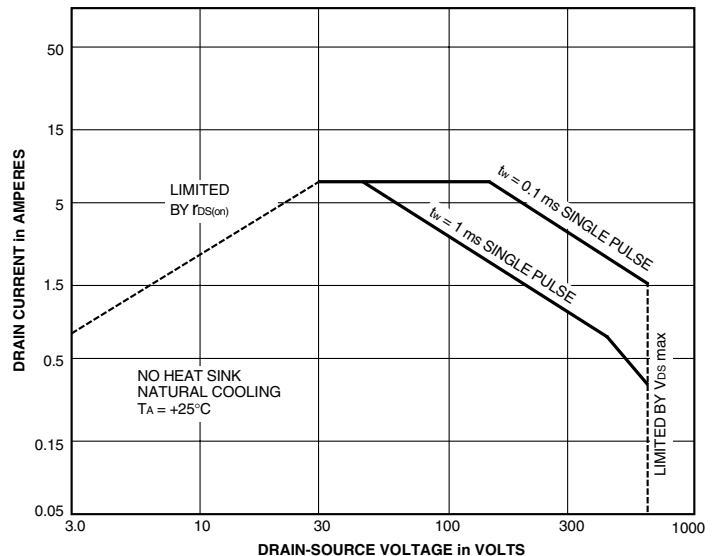
www.DataSheet4U.com

ALLOWABLE PACKAGE POWER DISSIPATION



Dwg. GK-003-4

MAXIMUM SAFE OPERATING AREA



Dwg. GK-004-5

STR-G6651 OFF-LINE QUASI-RESONANT FLYBACK SWITCHING REGULATOR

ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$, $V_{IN} = 18\text{ V}$, $V_{DD} = 10\text{ V}$, $V_S = 0$, voltage measurements are referenced to ground terminal (unless otherwise specified).

Characteristic	Symbol	Test Conditions	Limits			
			Min.	Typ.	Max.	Units
On-State Voltage	V_{INT}	Turn-on, increasing V_{IN}	14.4	16	17.6	V
Under-Voltage Lockout	V_{INQ}	Turn-off, decreasing V_{IN}	9.0	10	11	V
Over-Voltage Threshold	$V_{OVP(th)}$	Turn-off, increasing V_{IN}	20.5	22.5	24.5	V
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 300\ \mu\text{A}$	650	–	–	V
Drain Leakage Current	I_{DSS}	$V_{DS} = 650\text{ V}$	–	–	300	μA
On-State Resistance	$r_{DS(on)}$	$V_S = 10\text{ V}$, $I_D = 0.9\text{ A}$, $T_J = +25^\circ\text{C}$	–	–	3.95	Ω
Maximum OFF Time	t_{off}	Drain waveform high	45	–	55	μs
Minimum Pulse Duration for Input of Quasi-Resonant Signals	$t_{w(th)}$	Drain waveform high ¹	–	–	1.0	μs
Minimum OFF Time	t_{off}	Drain waveform high ¹	–	–	1.5	μs
Feedback Threshold Voltage	V_{FDBK}	Drain waveform low to high ¹	0.68	0.73	0.78	V
		Oscillation synchronized ²	1.3	1.45	1.6	V
Over-Current Protection/Feedback Sink Current	$I_{OCP/FB}$	$V_{OCP/FB} = 1.0\text{ V}$	1.2	1.35	1.5	mA
Latch Holding Current	$I_{IN(OVP)}$	V_{IN} reduced from 24.5 V to 8.5 V	–	–	400	mA
Latch Release Voltage	V_{IN}	$I_{IN} \leq 20\ \mu\text{A}$, V_{IN} reduced from 24.5 V	6.6	–	8.4	V
Switching Time	t_f	$V_{DD} = 200\text{ V}$, $I_D = 0.9\text{ A}$	–	–	250	ns
Supply Current	$I_{IN(ON)}$	Operating ³	–	–	30	mA
	$I_{IN(OFF)}$	Increasing V_{IN} prior to oscillation	–	–	100	μA
Insulation RMS Voltage	$V_{WM(RMS)}$	All terminals simultaneous reference metal plate against backside	2000	–	–	V
Thermal Shutdown	T_J		140	–	–	$^\circ\text{C}$
Thermal Resistance	$R_{\theta JM}$	Output junction-to-mounting frame	–	–	1.63	$^\circ\text{C/W}$

Notes: Typical Data is for design information only.

1. Feedback is square wave, $V_{IM} = 2.2\text{ V}$, $t_h = 1\ \mu\text{s}$, $t_l = 35\ \mu\text{s}$

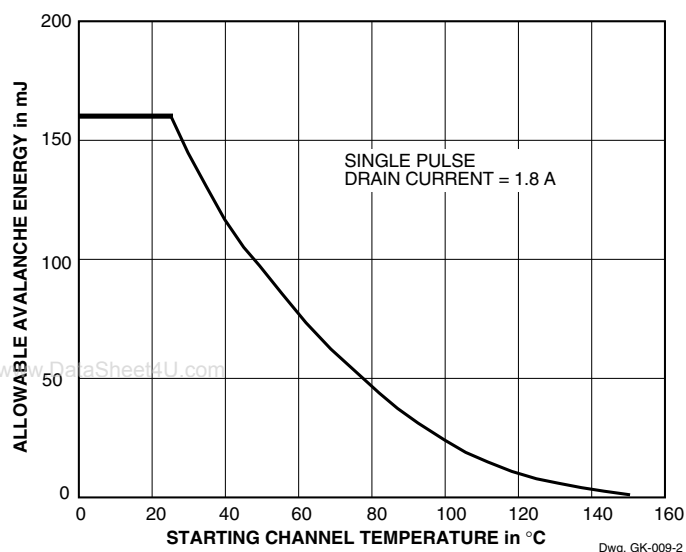
2. For quasi-resonant operation, the input signal must be longer than $t_{w(th)}$ and greater than V_{FDBK}

3. Feedback is square wave, $V_{IM} = 2.2\text{ V}$, $t_h = 4\ \mu\text{s}$, $t_l = 1\ \mu\text{s}$

STR-G6651

OFF-LINE QUASI-RESONANT FLYBACK SWITCHING REGULATOR

ALLOWABLE AVALANCHE ENERGY

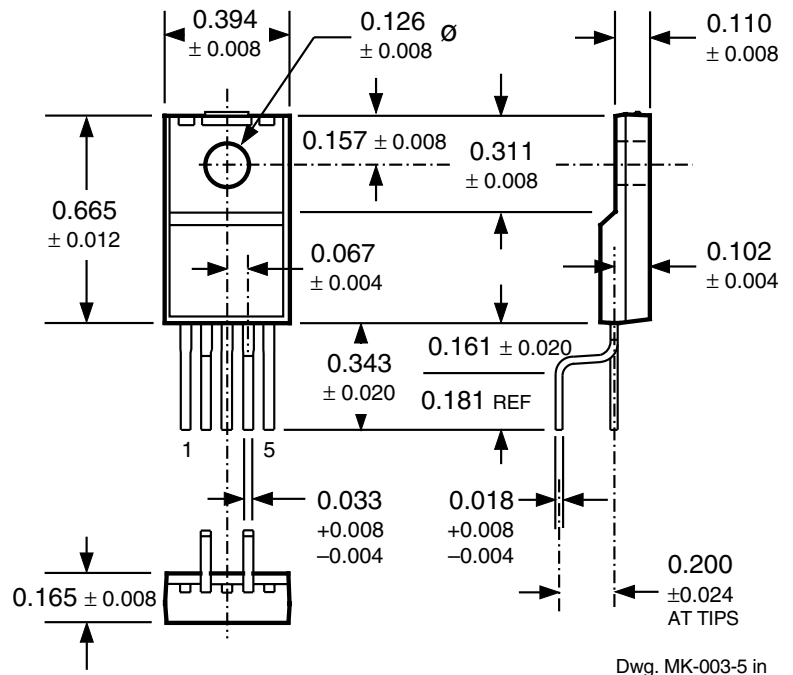


STR-G6600 Series

Part Number	Drain-Source Output Breakdown Voltage at $I_D = 300 \mu A$ $V_{(BR)DS}$, Minimum	Drain-Source ON Resistance at $I_D = 0.9 A$ $r_{DS(on)}$, Maximum	Output Power
For 100/120 V AC Input			
STR-G6622	450 V	2.18 Ω	44 W – 60 W
STR-G6624	450 V	0.92 Ω	98 W – 130 W
For 110/120 V AC Input			
STR-G6632	500 V	2.62 Ω	36 W – 50 W
For 200/220 V AC Input			
STR-G6651	650 V	3.95 Ω	66 W
STR-G6652	650 V	2.80 Ω	86 W
STR-G6653	650 V	1.95 Ω	120 W

STR-G6651
OFF-LINE
QUASI-RESONANT FLYBACK
SWITCHING REGULATOR

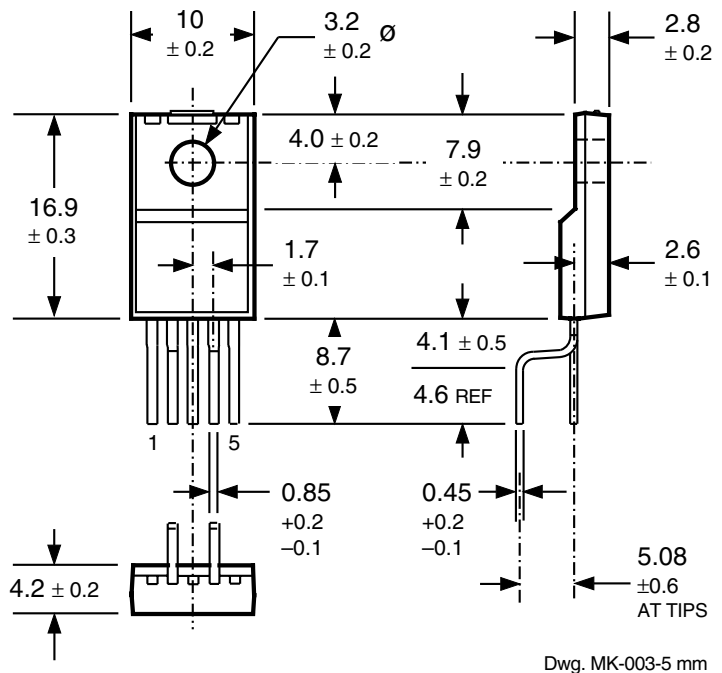
STR-G6651
(LF1129)



www.DataSheet4U.com **Dimensions in Inches**
(for reference only)

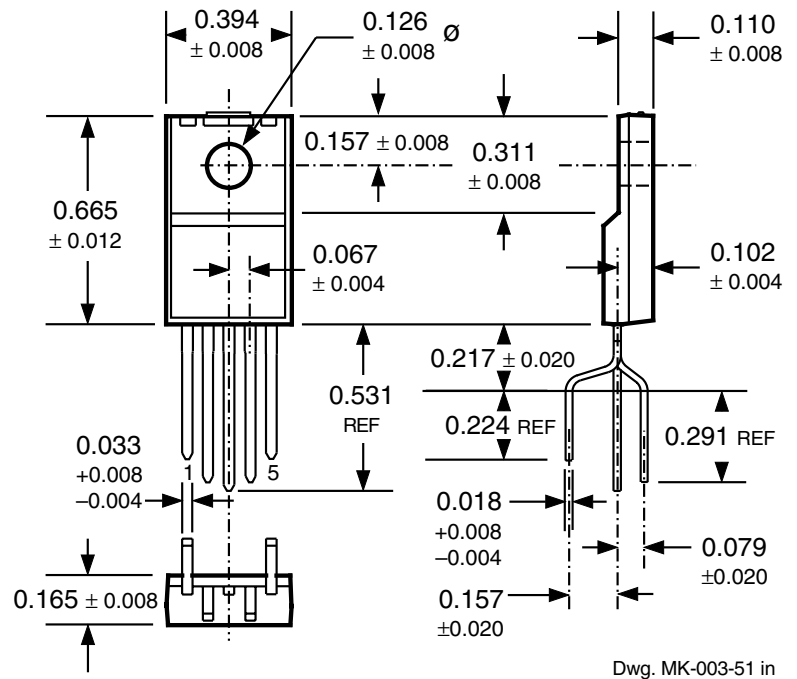
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Dimensions in Millimeters
(controlling dimensions)



**OFF-LINE
QUASI-RESONANT FLYBACK
SWITCHING REGULATOR**

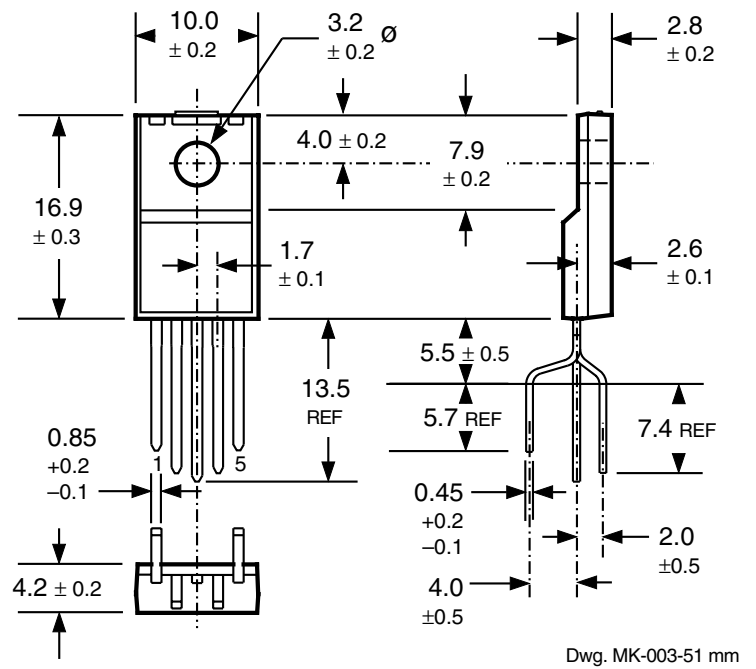
STR-G6651-LF
(LF1128)



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Dimensions in Millimeters
(controlling dimensions)



STR-G6651
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QUASI-RESONANT FLYBACK
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