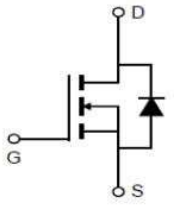
•General Description

The SJ MOSFET LH65R099FD has the low RDS(on), low gate charge,fast switching and excellent avalanche characteristics.This device offers extremely fast and robust body diode,and is suitable for telecom and power supplies



VDS =650V

$R_{DS(ON)}$ =99mΩ

ID=47A

TO-247

■RoHS COMPLIANT

•Features

■Much lower Ron*A performance for On-state efficiency

■Much lower FOM for fast switching effciency

•Application

■ LED/LCD/PDP TV and monitor Lighting

■UPS-Micro Inverter System

■Charger

■Power Supply

•Ordering Information:

Part number	LH65R099FD
Package	TO-247
Basic ordering unit (pcs)	330
Normal Package Material Ordering Code	LH65R099FDT2-T0247-TU
Halogen Free Ordering Code	LH65R099FDT2-T0247-TU-HF

•Absolute Maximum Ratings（TC =25℃）

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D T_C = 25°C (Silicon limit)	47	A
	I_D T_C = 100°C (Silicon limit)	28	
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})[1]	$I_{D\ pulse}$	141	A
Power Dissipation(TC=25℃)	P_D	391	W
Operating Junction Temperature	T_J	-55...+150	℃
Storage Temperature	T_{STG}	-55...+150	℃
Single Pulse Avalanche Energy[2]	E_{AS}	1160	mJ
Repetitive Avalanche Energy[2]	E_{AR}	1.76	mJ

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-SourceBreakdown Voltage	BVDSS	V_{GS}=0V,I_D=250μA	650			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	3.0		5.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =650V, V_{GS} =0V, TJ =25℃			1	uA
		T_J =150℃			5000	
Gate- Source Leakage Current	I_{GSS}	V_{GS}=+30V, V_{DS}=-30V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=24A		0.08	0.099	Ω
Rate resistance	R_G	f=1.0MHz open drain		0.8		Ω

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} =100V F = 1MHZ		4570		pF
Output capacitance	Coss			180		
Reverse transfer capacitance	Crss			6		
Turn -Off Delay Time	Td(off)	V_{DD} =400V, I_D=47A R_G=25Ω		105		ns
Turn-on delay time	Td(on)			49		
Rise time	Tr			123		
Fall time	Tf			49		
Total Gate Charge	Qg	I_D =47A, V_{DS} =520V V_{GS} =10V		78		nC
Gate-to-Source Charge	Qgs			24		
Gate-to-Drain Charge	Qgd			30		
Diode Forward Voltage	V_{SD}	I_D=47A V_{GS} =0V		0.9	1.2	V
Body Diode Reverse Recovery Time	Trr	I =23A, Vds=520V		145		ns
Body Diode Reverse Recovery Charge	Q_{rr}			0.87		nC
Peak Reverse Recovery Current	Irrm			12		A

●Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}		0.32		°C/W
Thermal resistance, junction - ambient	R_{thJA}		62		°C/W

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} = 3.5A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

●Typical Characteristics

Figure 1. Output Characteristics

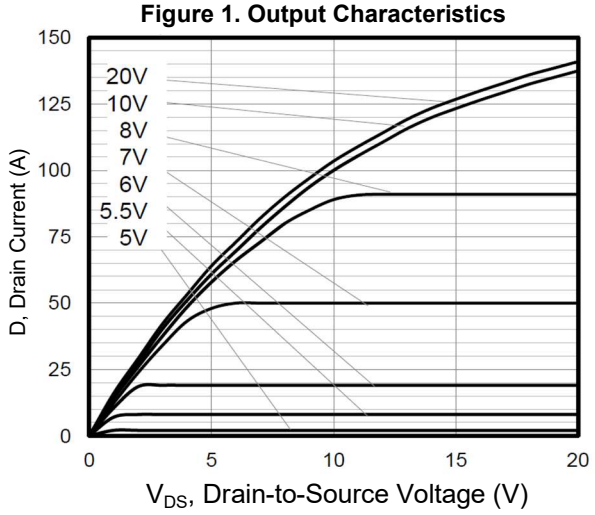


Figure 2. Transfer Characteristics

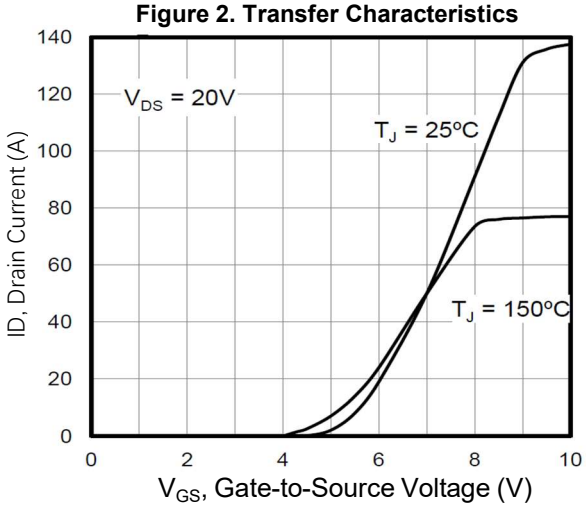


Figure 3. On-Resistance vs. Drain Current

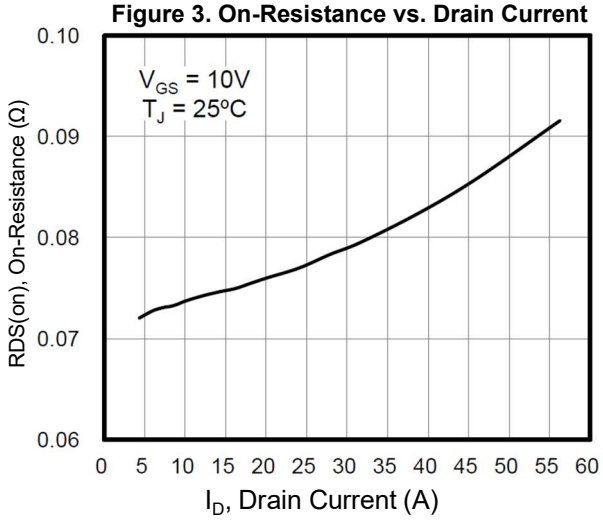


Figure 4. Capacitance

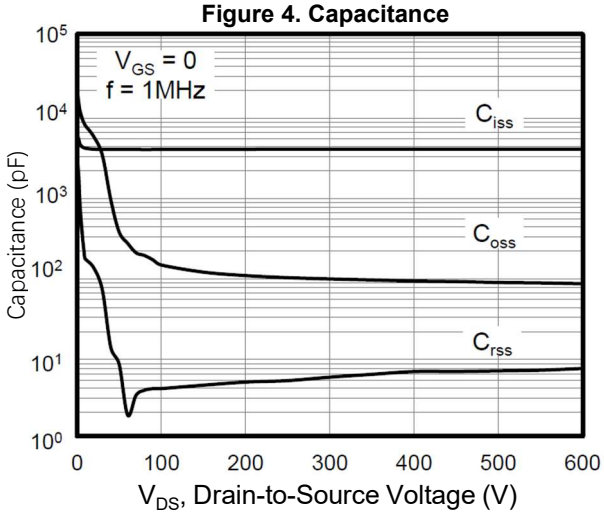


Figure 5. Gate Charge

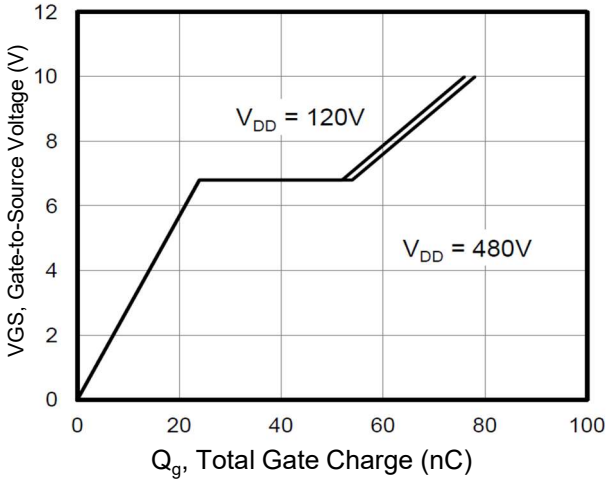
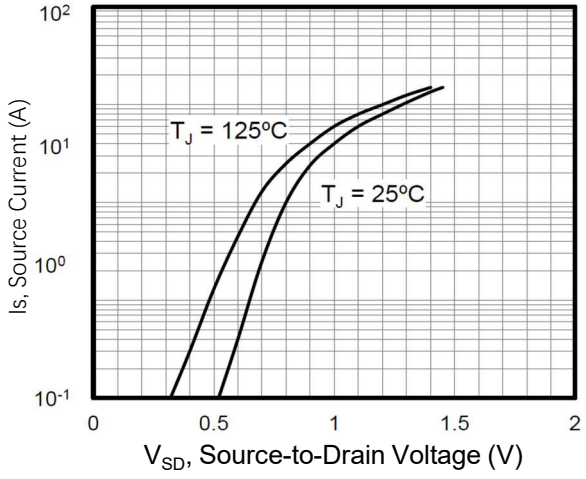


Figure 6. Body Diode Forward Voltage



Typical Characteristics (cont.)

Figure 7. On-Resistance vs. Junction Temperature

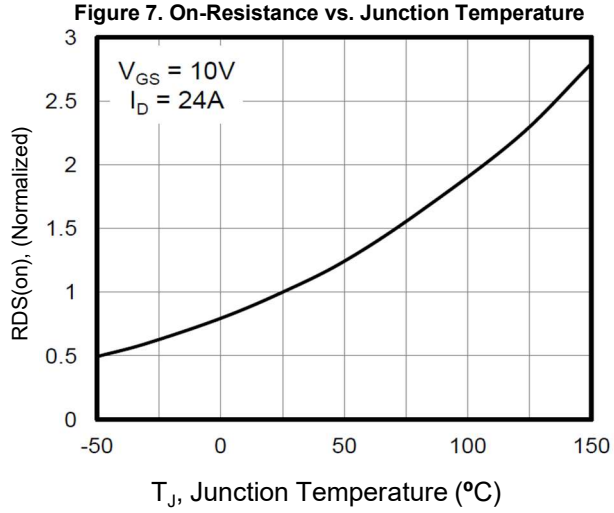


Figure 8. Breakdown voltage vs. Junction Temperature

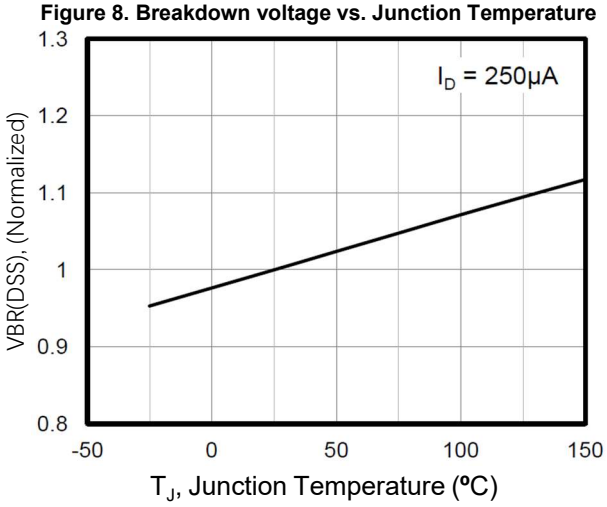


Figure 9. Transient Thermal Impedance for TO-247

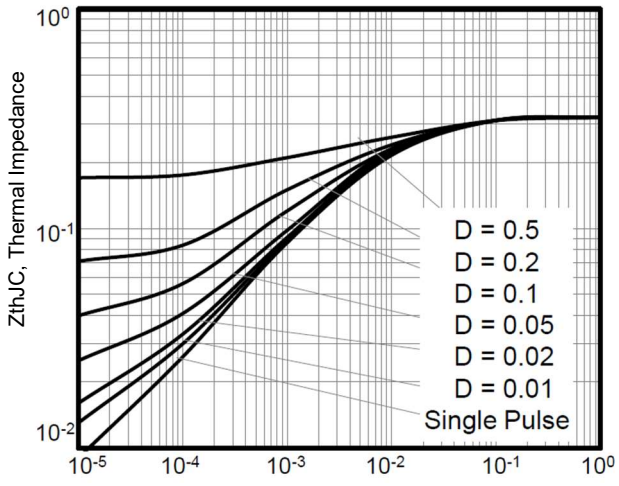
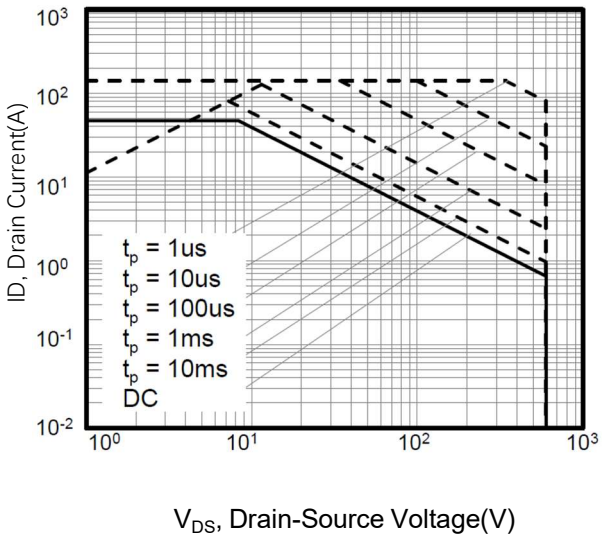


Figure 10. Safe operation area for TO-247



●Test Circuits & Waveforms

Figure A：Gate Charge Test Circuit and Waveform

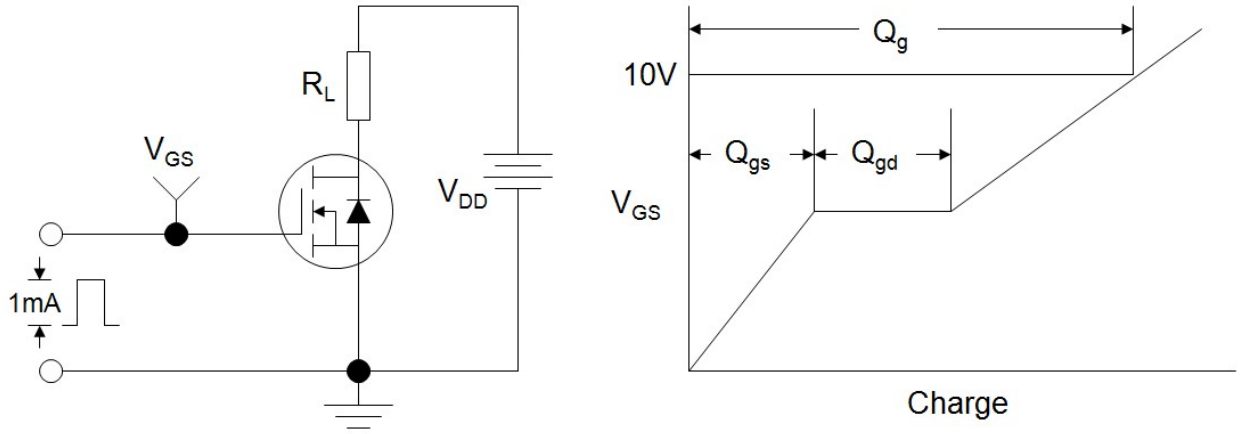


Figure B：Resistive Switching Test Circuit and Waveform

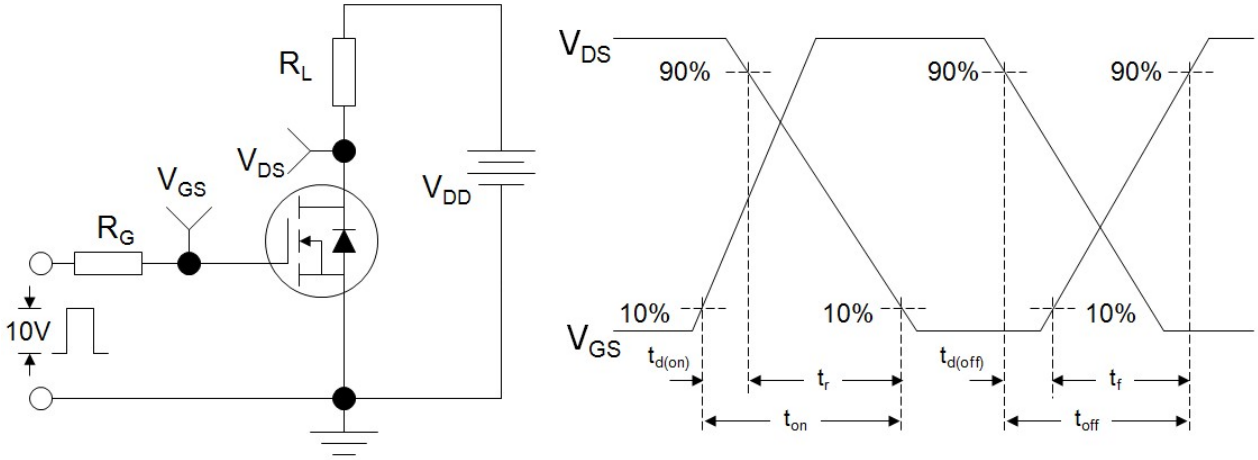
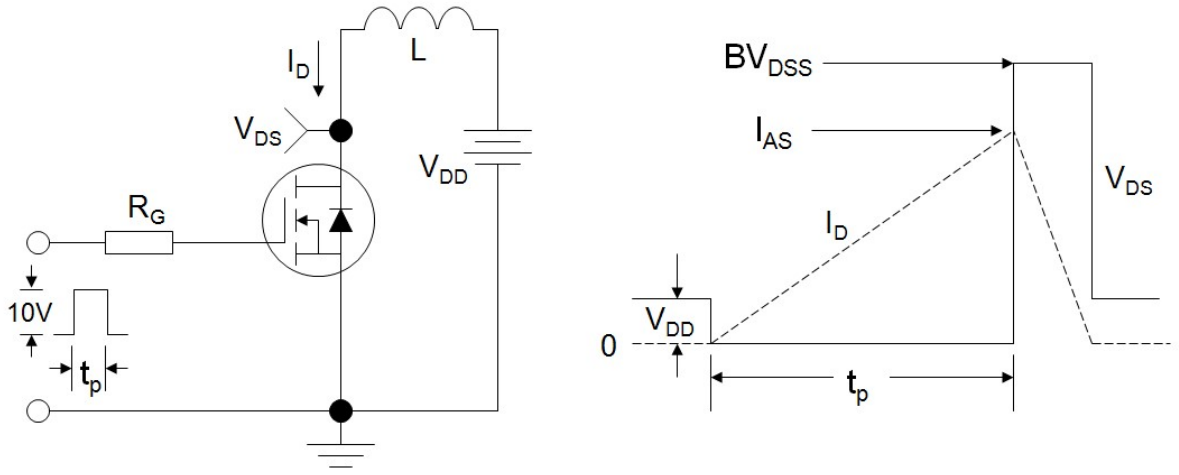


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



●Dimensions（TO-247）

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	15.60	16.00	G2	1.95	2.25
B	20.80	21.20	N	5.25	5.65
C	4.85	5.15	L1	4.00	4.30
D	1.85	2.15	L	19.60	20.40
E	1.00	1.40	I	2.30	2.50
F	0.50	0.70	ΦP	3.30	3.70
G1	3.00	3.30