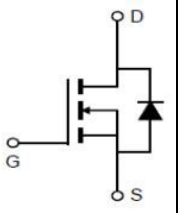
•General Description

The SJ MOSFET LH65R070FD 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



V_{DS}=650V

$R_{DS(ON)}$ =70mΩ

I_D=53A

TO-247

■RoHS COMPLIANT

•Features

■100% Avalanche Tested

■Low Power Loss By High Speed Switching

■Low On-Resistance

•Application

■DC-DC Converter

■UPS-Micro Inverter System

■PFC Power Supply

•Ordering Information:

Part number	LH65R070FD
Package	TO-247
Basic ordering unit (pcs)	330
Normal Package Material Ordering Code	LH65R070FDT2-T0247-TU
Halogen Free Ordering Code	LH65R070FDT2-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	53	A
	I_D T_C = 100°C	34	
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]	$I_{D\ pulse}$	160	A
Power Dissipation(TC=25℃)	P_D	391	W
Single Pulse Avalanche Energy[2]	E_{AS}	1165	mJ
Repetitive Avalanche Energy[2]	E_{AR}	1.78	mJ
Operating Junction Temperature	T_J	-55...+150	℃
Storage Temperature	T_{STG}	-55...+150	℃

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=250uA	650			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	2.0		4.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =600V, V_{GS}=0V, T_J=25℃			1	uA
		T_J=150℃			100	nA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=+30V, V_{DS}=-30V			±100	nA
Drain-Source On State Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=25A		60	70	mΩ
Rate resistance	R_G	f=1.0MHz open drain		2.4		Ω

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} =50V F = 1MHZ		4420		pF
Output capacitance	Coss			2960		
Reverse transfer capacitance	Crss			166		
Turn -Off Delay Time	Td(off)	V_{DD} =400V, I_D=53A, R_G=25Ω		410		ns
Turn-on delay time	Td(on)			68		
Rise time	Tr			202		
Fall time	Tf			160		
Total Gate Charge	Qg	I_D =53A, V_{DS} =480V V_{GS} =10V		132		nC
Gate-to-Source Charge	Qgs			30		
Gate-to-Drain Charge	Qgd			58		
Diode Forward Voltage	V_{SD}	I_D=47A V_{GS} =0V			1.4	V
Body Diode Reverse Recovery Time	Trr	I_D=23A, Vds=520V		198		ns
Body Diode Reverse Recovery Charge	Q_{rr}			13.7		nC
Peak Reverse Recovery Current	Irrm			47		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}		62.5		°C/W

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} =10A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

●Typical Characteristics

Figure 1. Output Characteristics

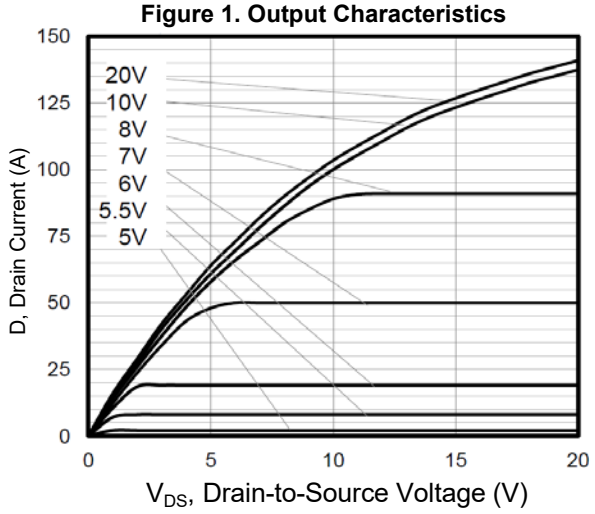


Figure 2. Transfer Characteristics

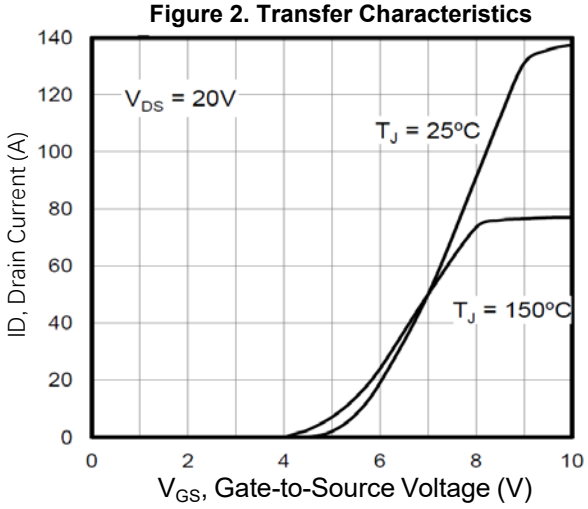


Figure 3. On-Resistance vs. Drain Current

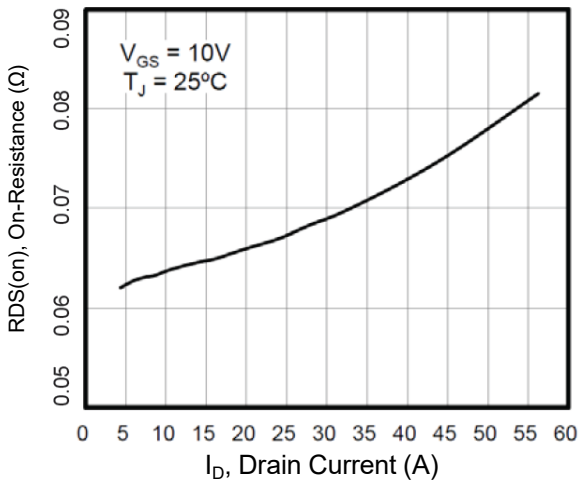


Figure 4. Capacitance

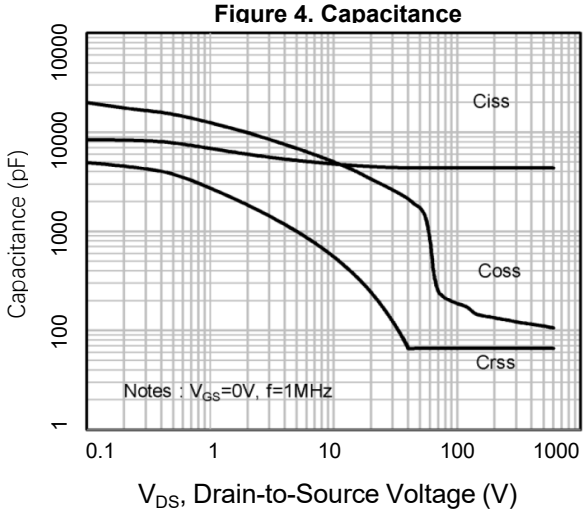


Figure 5. GateCharge Characteristics

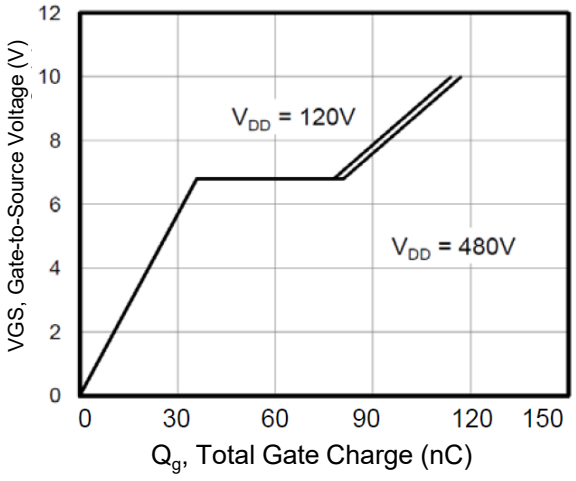
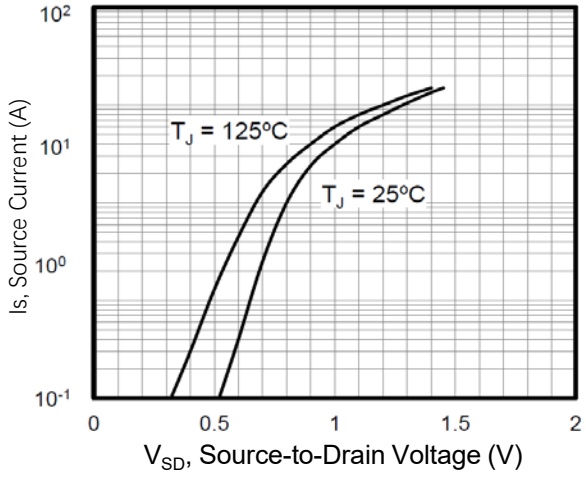


Figure 6. Body Diode Forward



Typical Characteristics (cont.)

Figure 7. On-Resistance vs. Junction Temperature

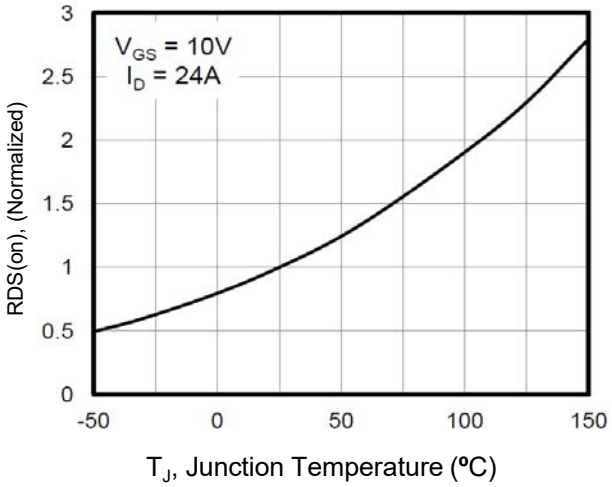


Figure 8. Breakdown voltage vs. Junction Temperature

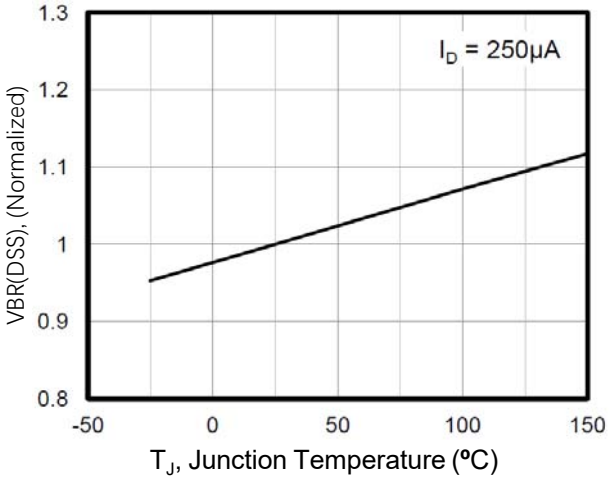


Figure 9. Transient Thermal Impedance for TO-247

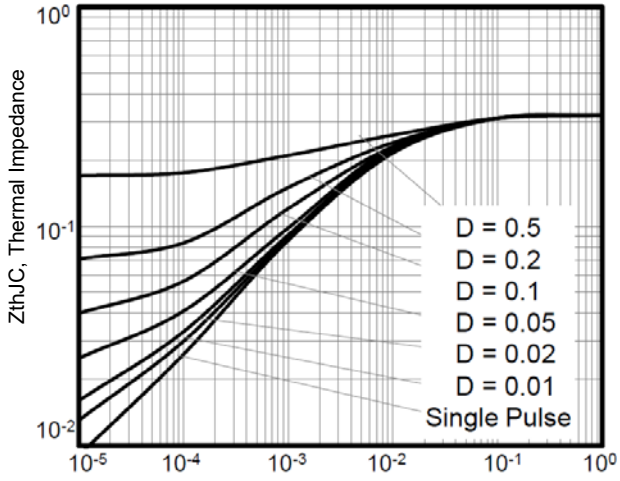
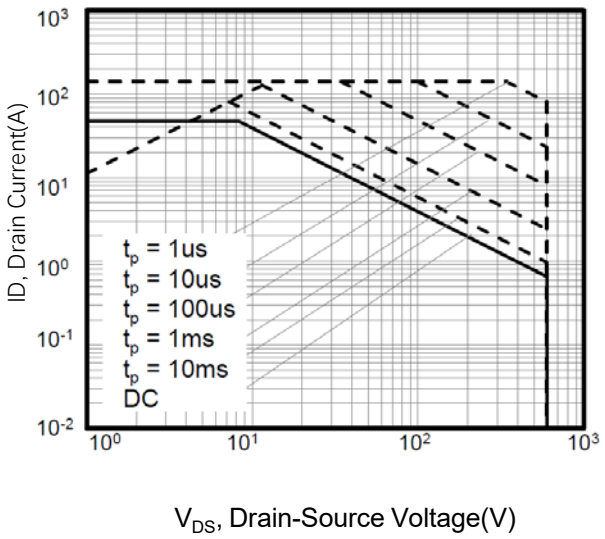


Figure 10. Safe operation area for TO-247



●Test Circuits & Waveforms

Figure A：Gate Charge Test Circuit and Waveform

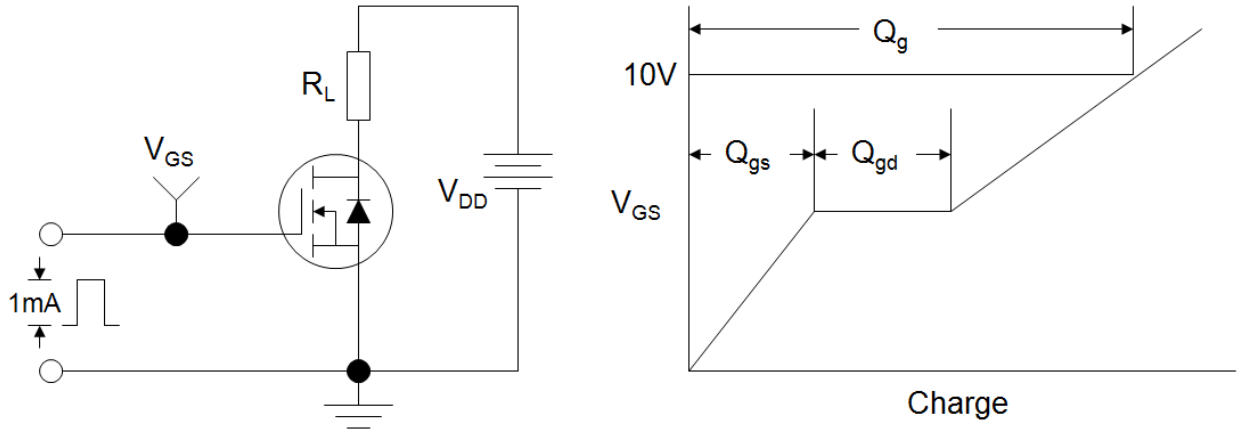


Figure B：Resistive Switching Test Circuit and Waveform

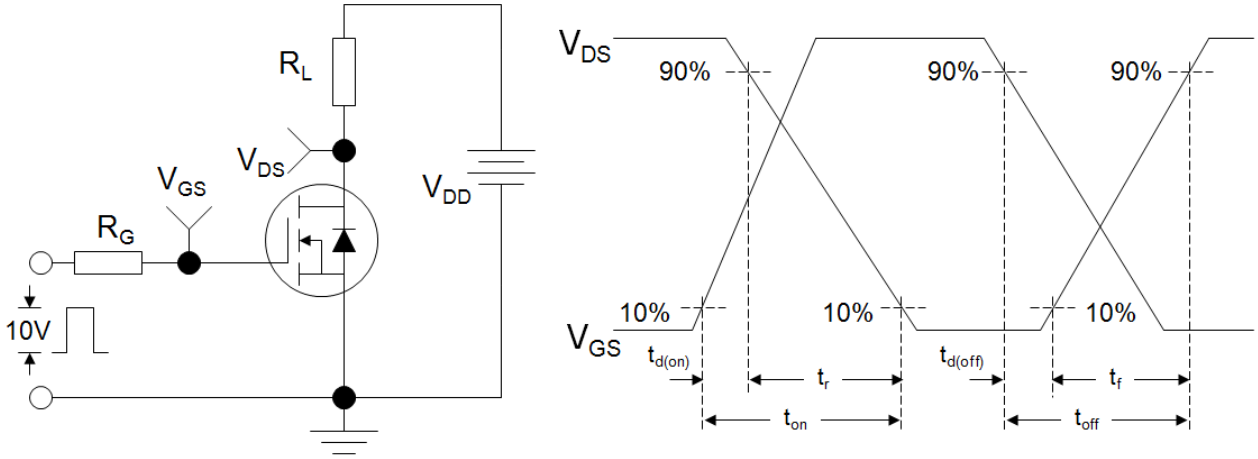
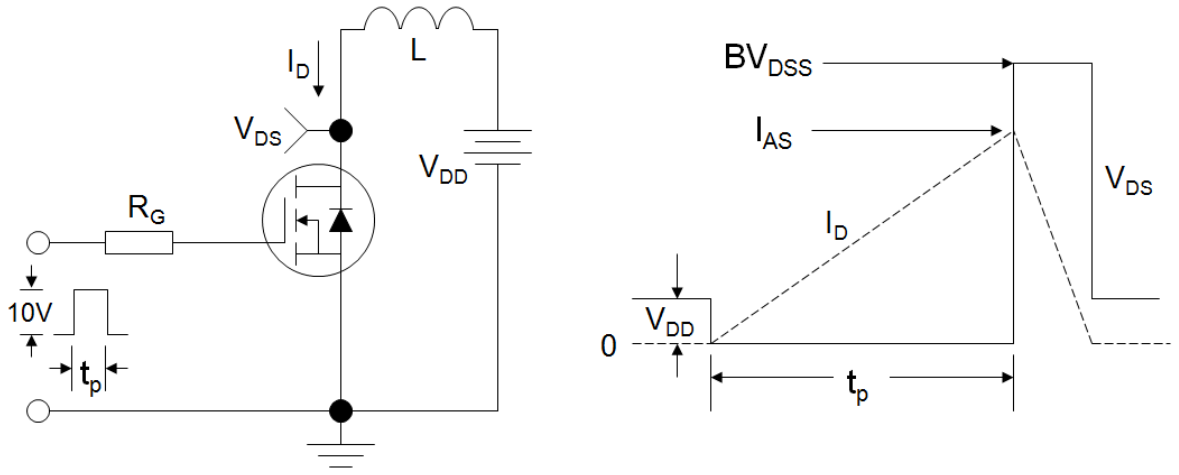


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



●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