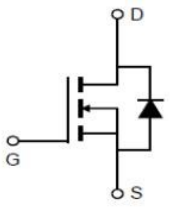
•General Description

The SJ MOSFET LH65R040 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

$R_{DS(ON)}$ =0.04Ω

I_D=78A

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	LH65R040
Package	TO-247
Basic ordering unit (pcs)	330
Normal Package Material Ordering Code	LH65R040T2-T0247-TU
Halogen Free Ordering Code	LH65R040T2-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	78	A
	I_D T_C = 100°C	48	
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]	$I_{D\ pulse}$	240	A
Power Dissipation(TC=25℃)	P_D	480	W
Single Pulse Avalanche Energy[2]	E_{AS}	2187	mJ
Diode dv/dt ruggedness	dv/dt	50	V/ns
Operating Junction Temperature	T_J	-55~+150	℃
Storage Temperature	T_{STG}	-55~+150	℃

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-SourceBreakdown 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}=0V	-	-	±100	nA
Drain-Source On State Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=20A	-	0.034	0.04	Ω
Gate Resistance	R_G	V_{GS}=0V,f=1.0MHz	-	2.5	-	Ω

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} =25V F = 1MHZ	-	7458	-	pF
Output capacitance	Coss		-	258	-	
Reverse transfer capacitance	Crss		-	76	-	
Turn -Off Delay Time	Td(off)	V_{DD} =300V, I_D=53A, R_G=25Ω	-	300	-	ns
Turn-on delay time	Td(on)		-	40	-	
Rise time	Tr		-	158	-	
Fall time	Tf		-	81	-	
Total Gate Charge	Qg	I_D =53A, V_{DS} =480V V_{GS} =10V	-	140	-	nC
Gate-to-Source Charge	Qgs		-	33	-	
Gate-to-Drain Charge	Qgd		-	55	-	
Diode Forward Voltage	V_{SD}	I_D=20A V_{GS} =0V	-	-	1.3	V
Body Diode Reverse Recovery Time	Trr	I_D=53A, Vds=520V	-	580	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	13	-	uC
Peak Reverse Recovery Current	Irrm		-	53	-	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} =25A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

●Typical Characteristics

Figure 1. Output Characteristics

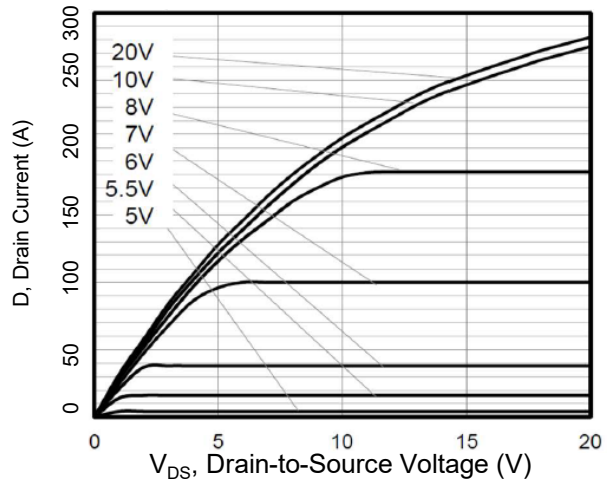


Figure 2. Transfer Characteristics

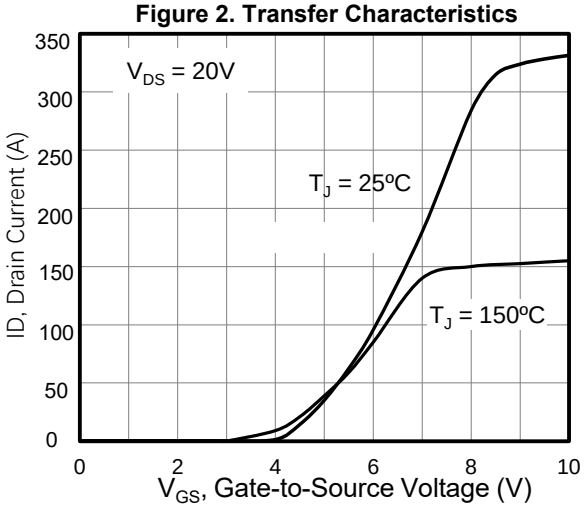


Figure 3. On-Resistance vs. Drain Current

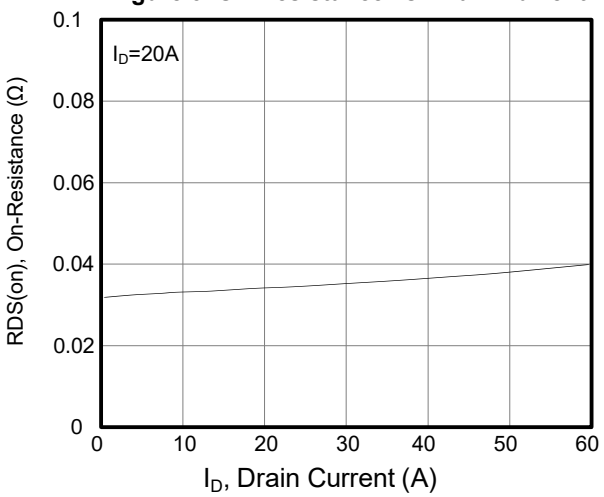


Figure 4. Capacitance

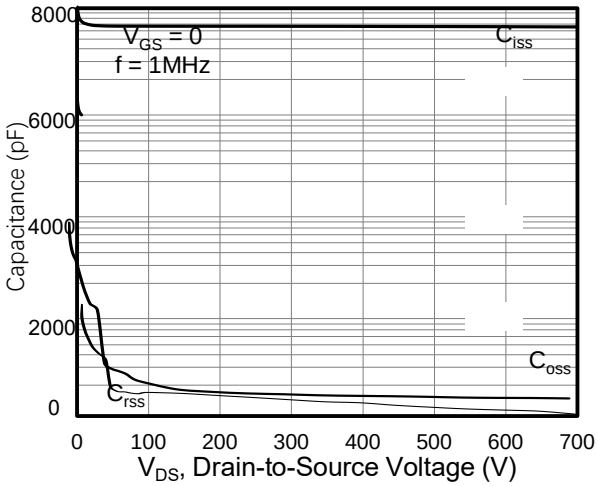


Figure 5. Gate Charge

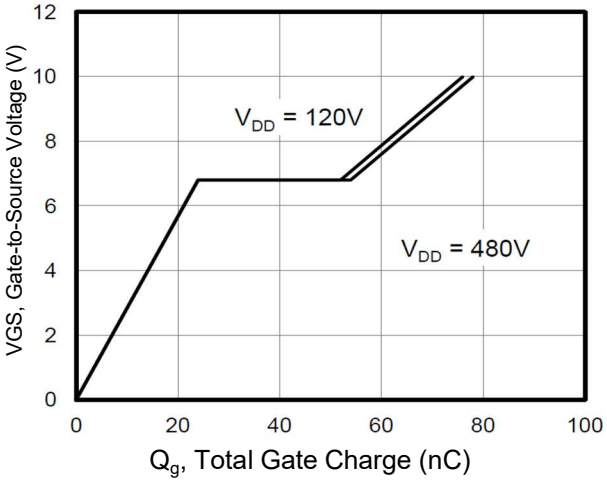
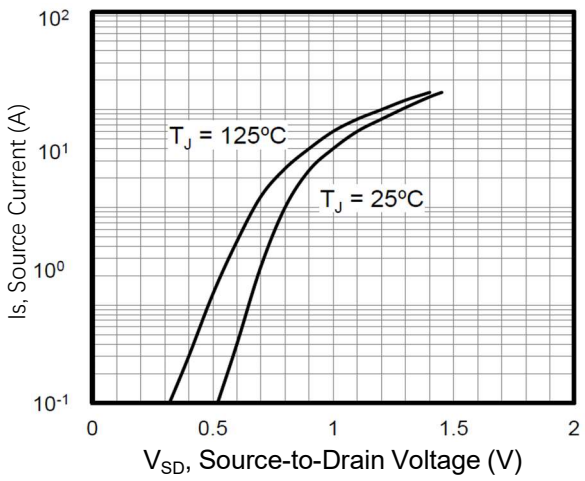


Figure 6. Body Diode Forward Voltage



Typical Characteristics (cont.)

Figure 7. On-Resistance vs. Junction Temperature

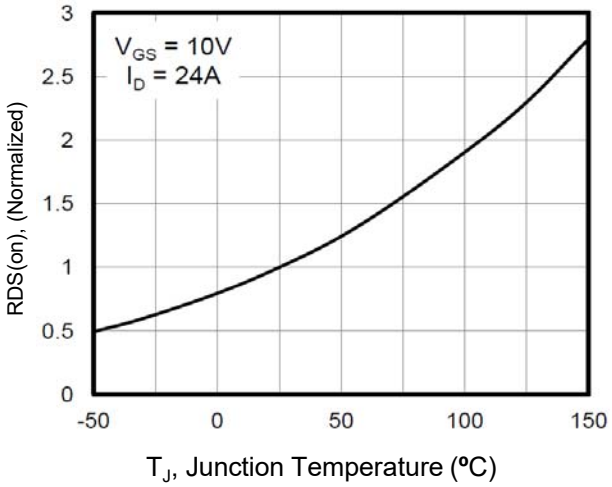


Figure 8. Breakdown voltage vs. Junction Temperature

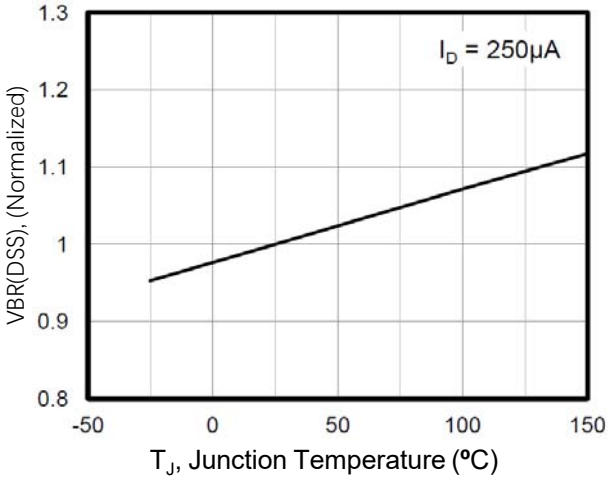


Figure 9. Transient Thermal Impedance for TO-247

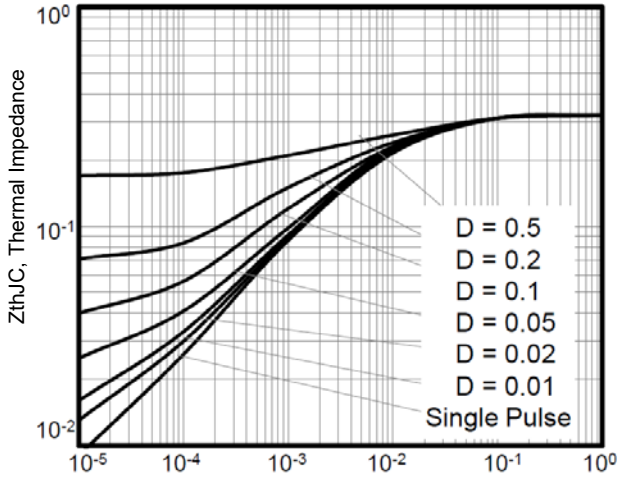
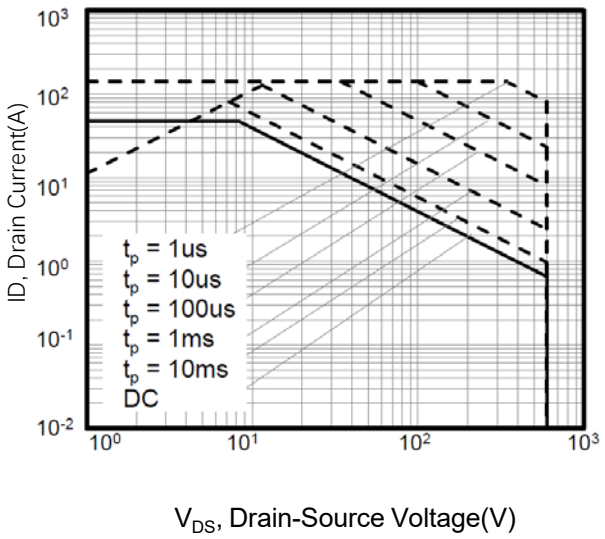


Figure 10. Safe operation area for TO-247



●Test Circuits & Waveforms

Figure A：Gate Charge Test Circuit and Waveform

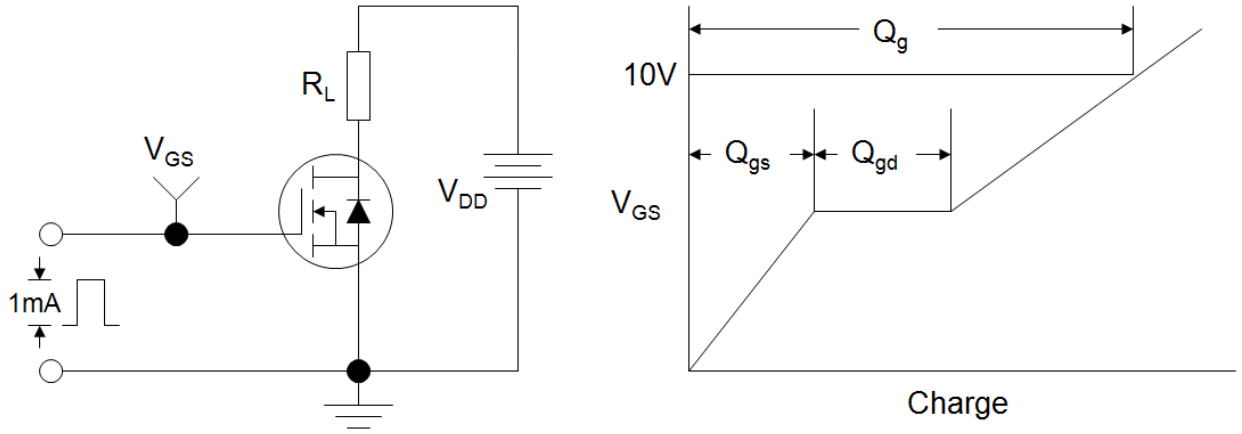


Figure B：Resistive Switching Test Circuit and Waveform

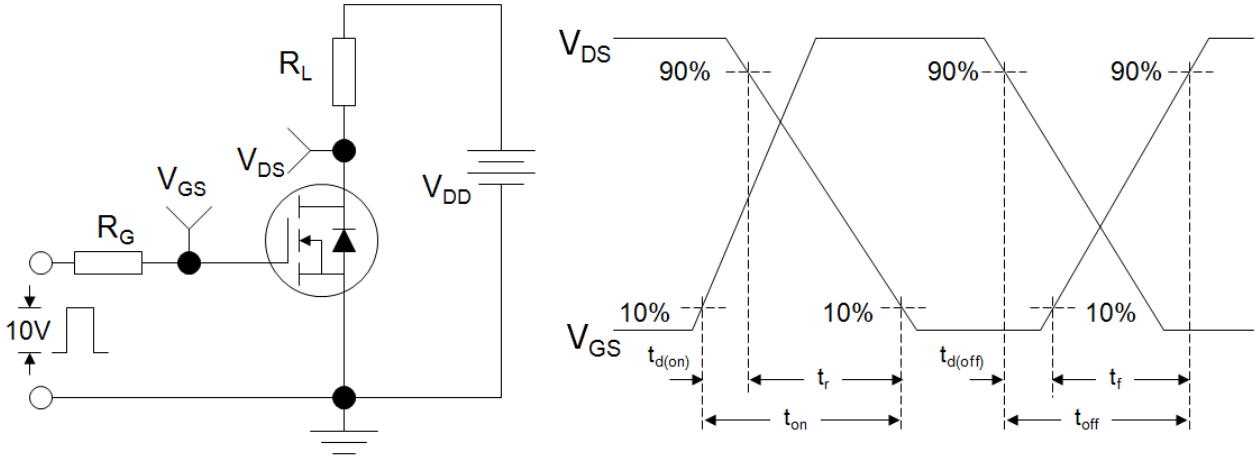
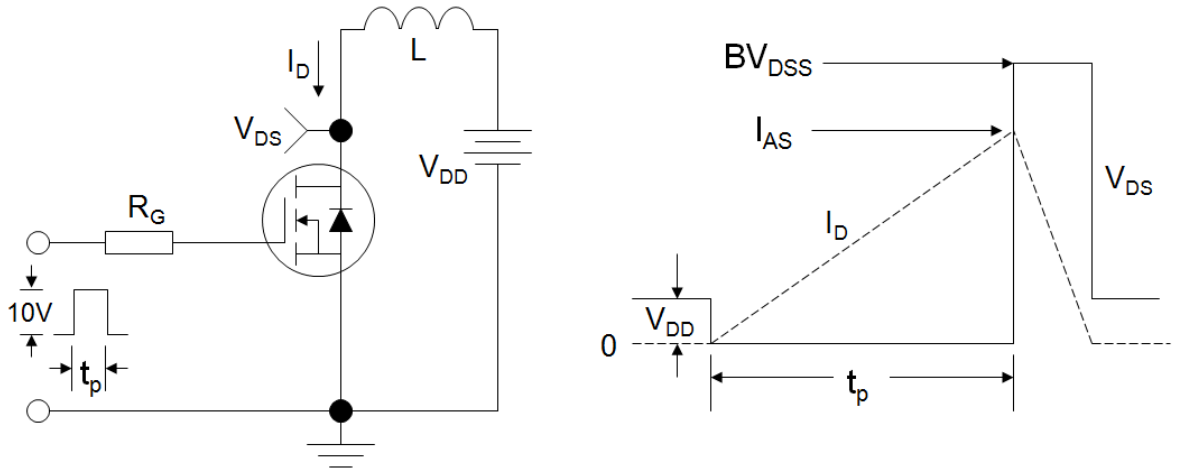


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



●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