

●General Description

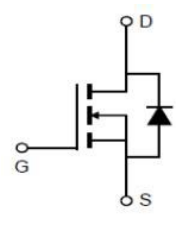
The SJ MOSFET LH60R028FD has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device offers extremely fast and robust body diode, and is suitable for telecom and power supplies.

●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

	$V_{DS}=600V$ $R_{DS(ON)}=0.028\Omega$ $I_D=82A$
 TO-247	■RoHS COMPLIANT

●Ordering Information:

Part number	LH60R028FD
Package	TO-247
Basic ordering unit (pcs)	330
Normal Package Material Ordering Code	LH60R028FDT2-T0247-TU
Halogen Free Ordering Code	LH60R028FDT2-T0247-TU-HF

●Absolute Maximum Ratings (TC =25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D $T_C = 25^\circ C$	82	A
	I_D $T_C = 100^\circ C$	48	
Pulsed drain current ($T_C = 25^\circ C$, t_D limited by T_{imax}) ¹	$I_{D \text{ pulse}}$	246	A
Power Dissipation($T_C=25^\circ C$)	P_D	480	W
Single Pulse Avalanche Energy ²	E_{AS}	2190	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-Source Breakdown Voltage	$B_{V_{DS}}$	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V,$ $T_J=25^{\circ}C$ $T_J=150^{\circ}C$	-	-	1	μA
			-	-	100	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Drain-Source On State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	0.028	0.03	Ω
Gate Resistance	R_G	$V_{GS}=0V, f=1.0MHz$	-	3.8	-	Ω

●Electronic Characteristics

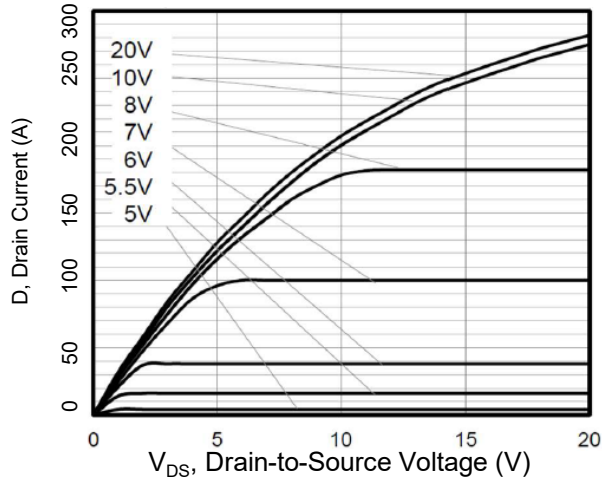
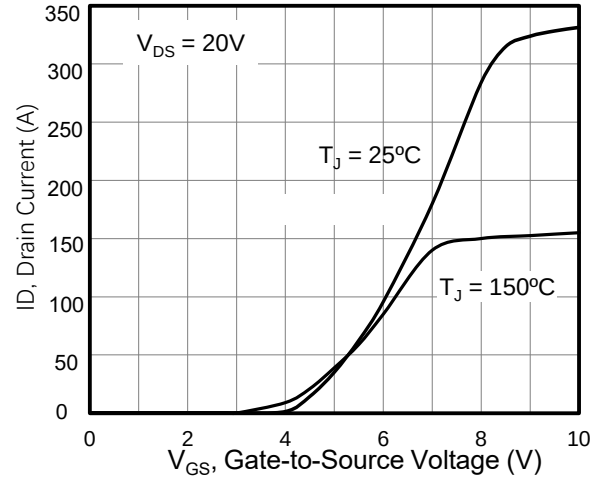
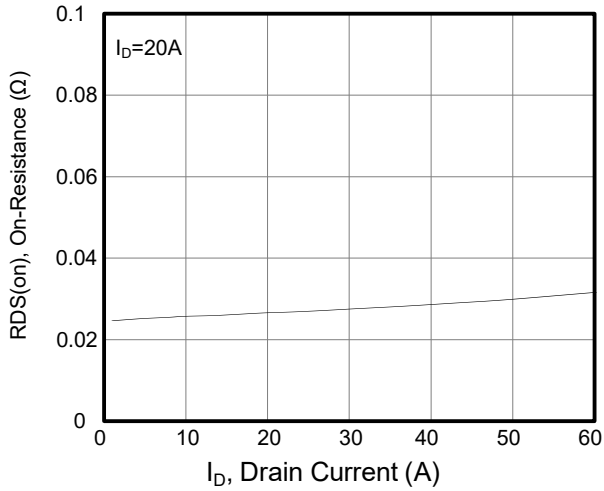
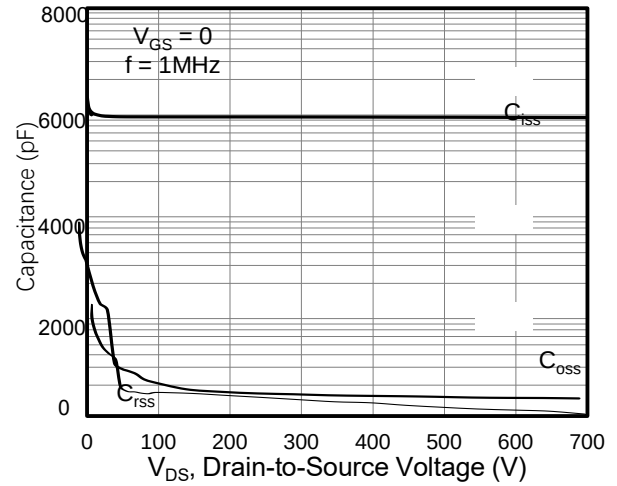
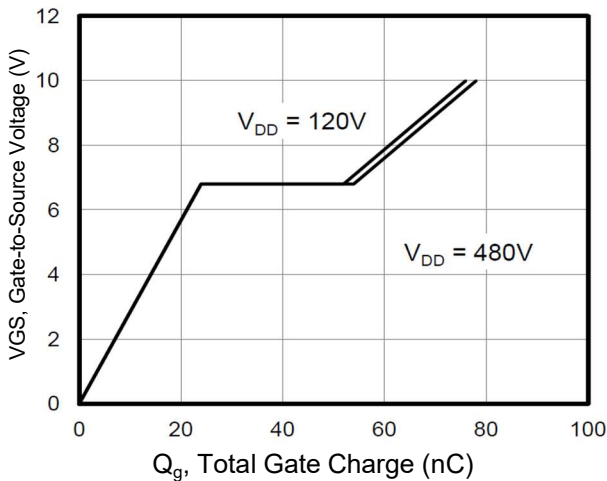
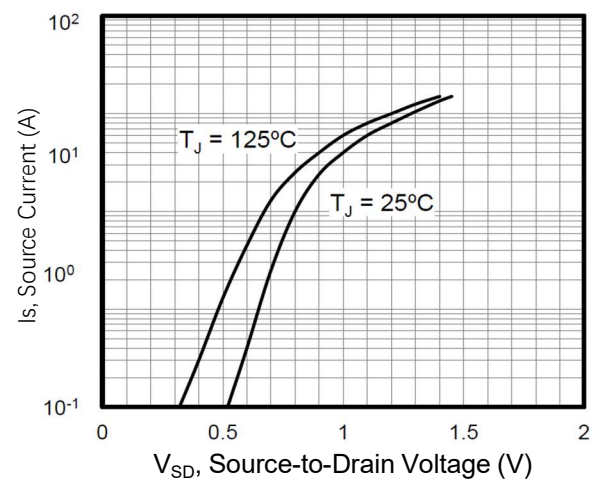
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $F=1MHz$	-	6380	-	pF
Output capacitance	C_{oss}		-	98	-	
Reverse transfer capacitance	C_{rss}		-	184	-	
Turn -Off Delay Time	$T_d(off)$	$V_{DD}=300V,$ $I_D=53A, R_G=25\Omega$	-	120	-	ns
Turn-on delay time	$T_d(on)$		-	106	-	
Rise time	T_r		-	95	-	
Fall time	T_f		-	11	-	
Total Gate Charge	Q_g	$I_D=60A, V_{DS}=480V$ $V_{GS}=10V$	-	162	-	nC
Gate-to-Source Charge	Q_{gs}		-	38	-	
Gate-to-Drain Charge	Q_{gd}		-	48	-	
Diode Forward Voltage	V_{SD}	$I_D=20A$ $V_{GS}=0V$	-	-	1.4	V
Body Diode Reverse Recovery Time	T_{rr}	$I_D=20A,$ $V_{DS}=520V$	-	280	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	8.56	-	μC
Peak Reverse Recovery Current	I_{rrm}		-	48	-	A

●Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	0.32	-	$^{\circ}C/W$
Thermal resistance, junction - ambient	R_{thJA}	-	62.5	-	$^{\circ}C/W$

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS}=25A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$

•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

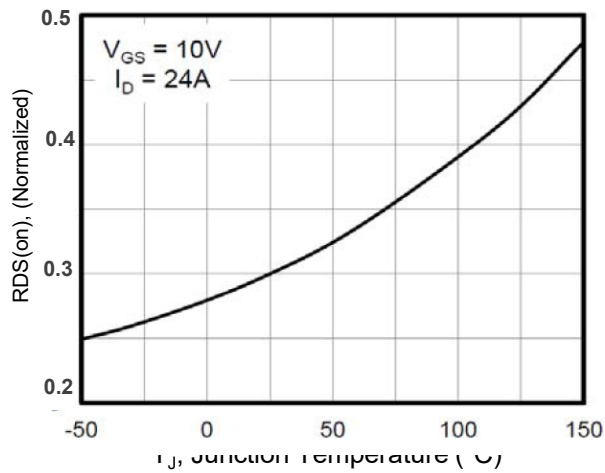


Figure 8. Breakdown voltage vs. Junction Temperature

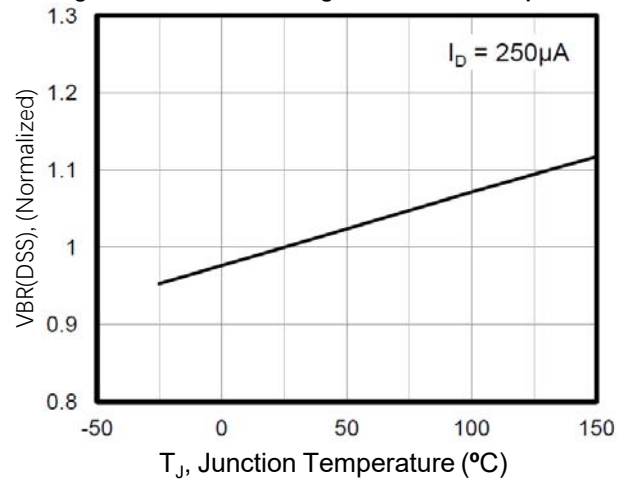


Figure 9. Transient Thermal Impedance for TO-247

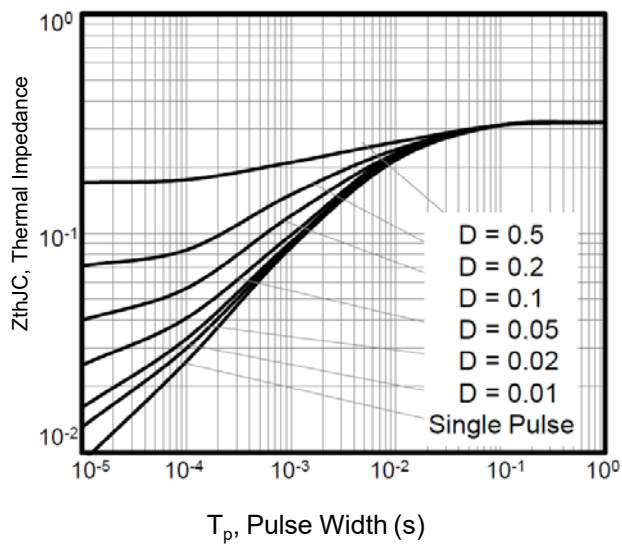
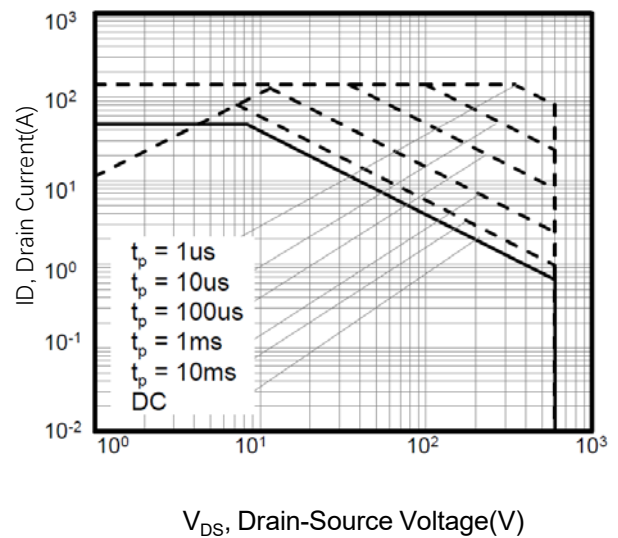


Figure 10. Safe operation area for TO-247



● **Test Circuits & Waveforms**

Figure 11. Gate Charge Test Circuit and Waveform

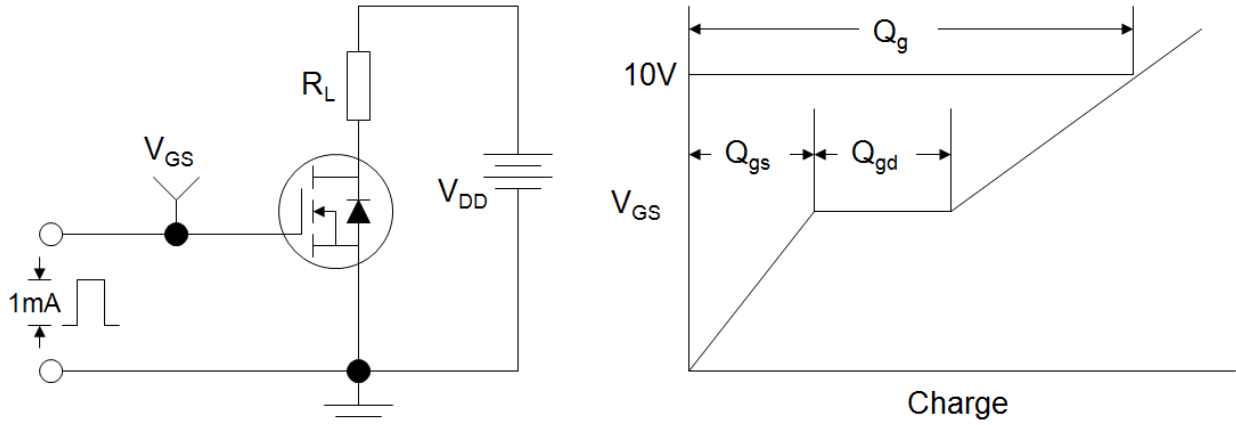


Figure 12. Resistive Switching Test Circuit and Waveform

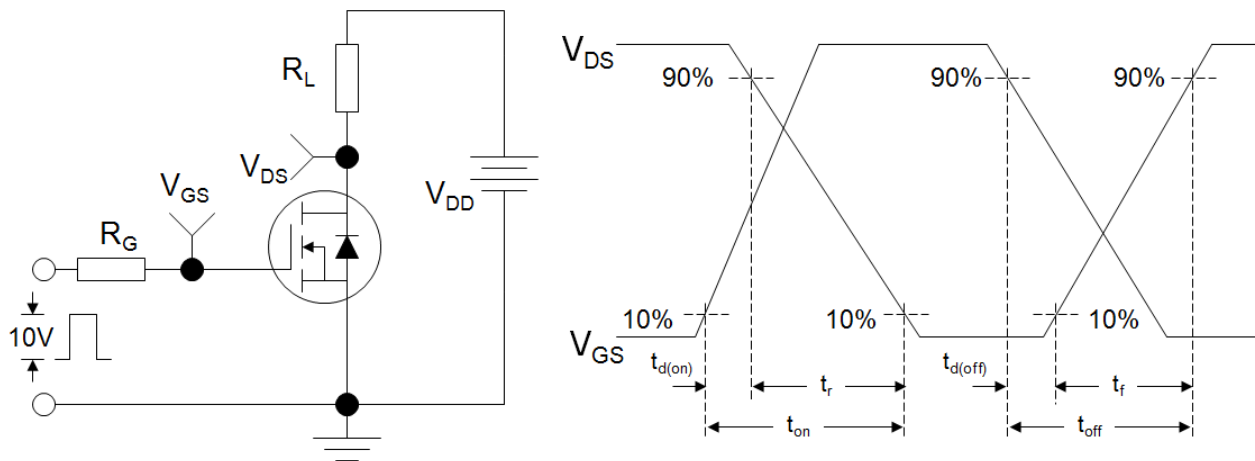
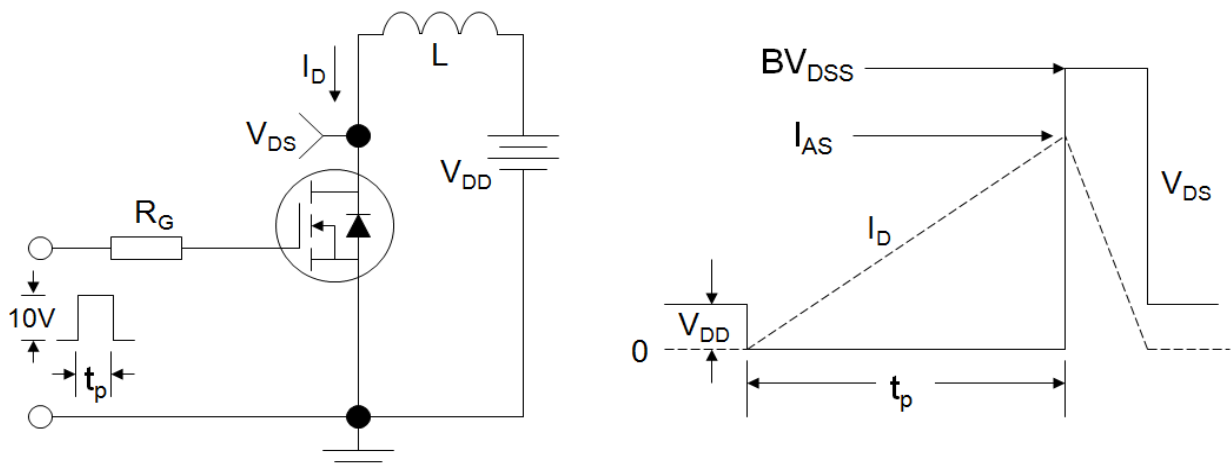


Figure 13. Unclamped Inductive Switching Test Circuit and Waveform



●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			

