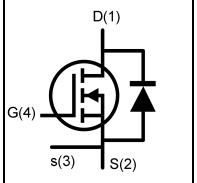
•General Description

•Features

■High Blocking Voltage

■Low Power Loss By High Speed Switching

■Low On-Resistance

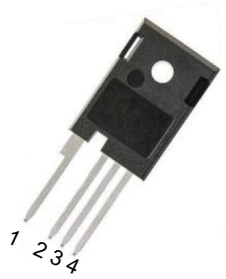


V_{DS}=650V

$R_{DS(ON)}$ =0.042Ω

I_D=50A

■RoHS COMPLIANT



•Application

■DC-DC Converter

■UPS-Micro Inverter System

■PFC Power Supply

•Ordering Information:

Part number	LHC65R042
Package	TO247-4
Basic ordering unit (pcs)	330
Normal Package Material Ordering Code	LHC65R042T24-TO247-4-TU
Halogen Free Ordering Code	LHC65R042T24-TO247-4-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	50	A
	I_D T_C = 100°C	35	
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})[1]	$I_{D\ pulse}$	105	A
Power Dissipation(T_C=25℃)	P_D	240	W
Gate to Source Voltage(dynamic)	$V_{GS(MAX)}$	-10/+20	V
Gate to Source Voltage(static)	V_{GSOP}	-5/+18	V
Operating Junction Temperature	T_J	-55~+175	℃
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=1mA	2.0	-	4.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =600V, V_{GS}=0V, T_J =25℃	-	-	100	uA
		T_J =175℃	-	-	100	nA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	-	200	nA
Drain-Source On State Resistance	$R_{DS(ON)}$	V_{GS} =18V, I_D=20A	-	0.034	0.042	Ω
Gate Resistance	R_G	V_{GS}=0V,f=1.0MHz	-	2.2	-	Ω

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS} = 0V, V_{DS} =25V F = 1MHZ	-	1800	-	pF
Output capacitance	Coss		-	158	-	
Reverse transfer capacitance	Crss		-	16	-	
Turn -Off Delay Time	Td(off)	V_{DD} =300V, I_D=20A, R_G=10Ω	-	50	-	ns
Turn-on delay time	Td(on)		-	20	-	
Rise time	Tr		-	38	-	
Fall time	Tf		-	21	-	
Total Gate Charge	Qg	I_D =20A, V_{DS} =480V V_{GS} =-5/18V	-	90	-	nC
Gate-to-Source Charge	Qgs		-	33	-	
Gate-to-Drain Charge	Qgd		-	25	-	
Turn On Switching Energy	E_{ON}	V_{DD} =300V, I_D=20A, R_G=10Ω	-	203	-	uJ
Turn Off Switching Energy	E_{OFF}		-	24	-	
Diode Forward Voltage	V_{SD}	I_D=20A, V_{GS} =-5V, T_J =25℃	-	3.0	-	V
		T_J =175℃	-	2.5	-	
Body Diode Reverse Recovery Time	Trr	I_D=53A, Vds=520V	-	40	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	143	-	uC
Peak Reverse Recovery Current	Irrm		-	9.0	-	A

●Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	0.62	-	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	40	-	°C/W

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature

●Typical Characteristics

Figure 1. Output Characteristics

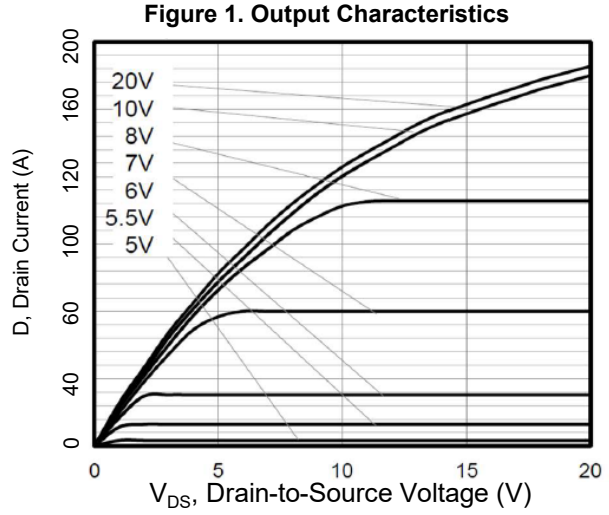


Figure 2. Transfer Characteristics

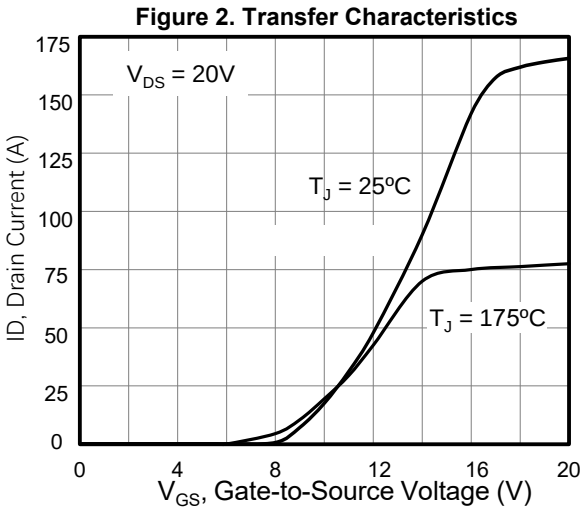


Figure 3. On-Resistance vs. Drain Current

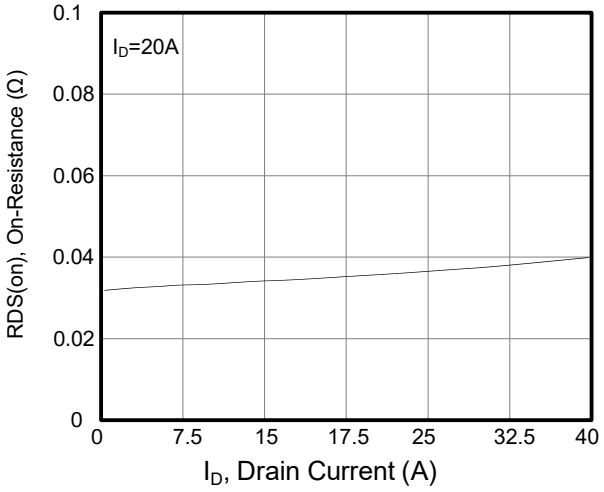


Figure 4. Capacitance

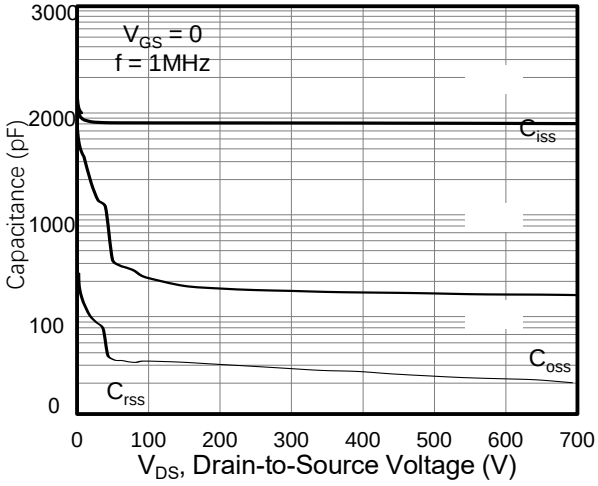


Figure 5. Gate Charge

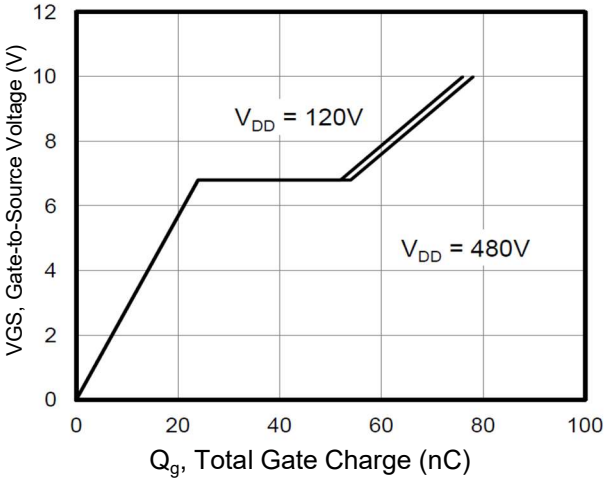
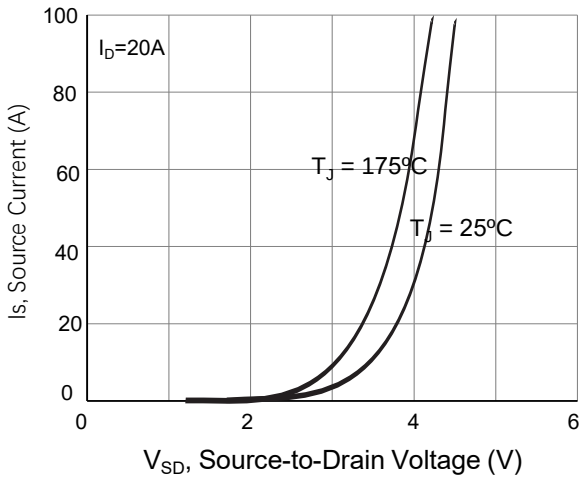


Figure 6. Body Diode Forward Voltage



Typical Characteristics (cont.)

Figure 7. Typical Capacitance Stored Energy

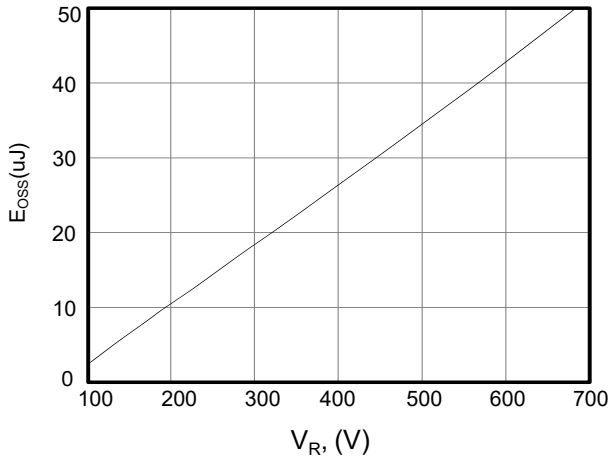


Figure 8. Power Dissipation

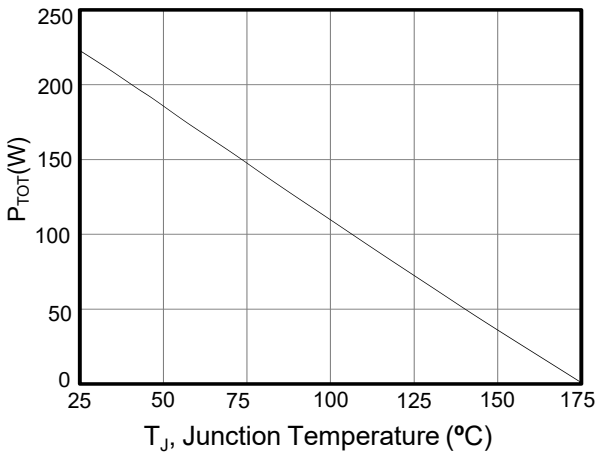


Figure 9. Transient Thermal Impedance for TO-247

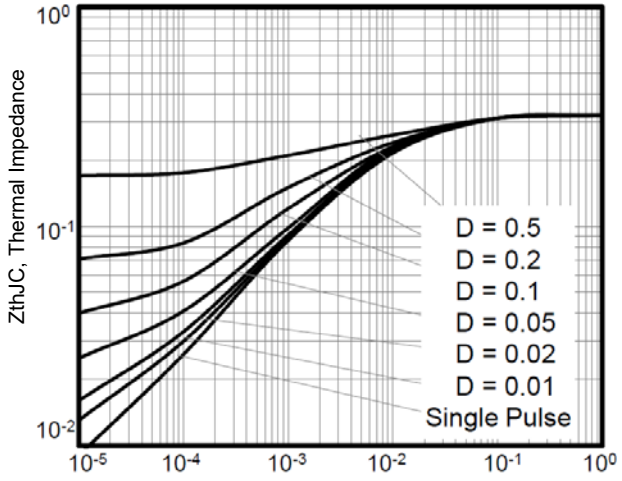


Figure 10. Safe operation area for TO-247