

MAIN CHARACTERISTICS

I_D	44A
V_{DSS}	800V
$R_{DS(on)-typ}$ (@ $V_{GS}=18V$)	45m Ω

FEATURES

- High switching speed with a low gate charge
- Fast intrinsic diode with low reverse recovery
- Robust Avalanche Capability
- 100% Avalanche Tested
- Pb-free, Halogen Free, and RoHS Compliant

APPLICATIONS

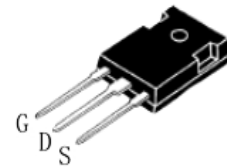
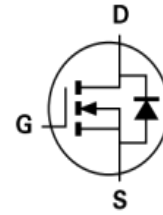
- Server & Telecom power
- EV charging station
- Solar inverter / ESS / UPS
- Industrial power supply

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106

Product specification classification

Part Number	Package	Mode Name	Pack
LSC45M65B	TO-247	LSC45M65B	Tube



TO-247

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	-10/+22	V
Recommended Operation Value	VGSop	-5/+18	V
Continue Drain Current	I_D	44	A
Pulsed Drain Current (Note1)	I_{DM}	117	A
Power Dissipation	P_D	150	W
Operating Temperature Range	T_J	175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	40	°C/W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Electrical Characteristics at Tc=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 1 \text{ mA}$	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	100	μ A
Gate Leakage Current	$V_{GS} = +22 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
	$V_{GS} = -10 \text{ V}, V_{DS} = 0 \text{ V}$		-	-	-100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 7 \text{ mA}$	$V_{GS(th)}$	1.8	-	4.5	V
Drain-Source On-State Resistance	$V_{GS} = 18 \text{ V}, I_D = 20 \text{ A}$	$R_{DS(on)}$	-	45	63	m Ω
	$V_{GS} = 18 \text{ V}, I_D = 20 \text{ A}, T_J = 175^\circ\text{C}$		-	59	-	
Forward Transconductance	$V_{DS} = 20 \text{ V}, I_D = 20 \text{ A}$	gfs	-	13.4	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 400 \text{ V}, f = 250 \text{ KHz}$	C_{iss}	-	1048	-	pF
Output Capacitance		C_{oss}	-	131	-	pF
Reverse Transfer Capacitance		C_{rss}	-	9.1	-	pF
Stored Energy in Output Capacitance	$V_{DS} = 0 \text{ V to } 400 \text{ V}, V_{GS} = 0 \text{ V}$	Eoss	-	13	-	μ J
Energy Related Output Capacitance		Co(er)	-	162	-	pF
Time Related Output Capacitance		Co(tr)	-	236	-	pF
Total Gate Charge(Note2)	$I_D = 20 \text{ A}, V_{DD} = 400 \text{ V}, V_{GS} = -5 \text{ V} / 18 \text{ V}$	Q_G	-	56	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	14	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	15	-	nC
Turn-on Delay Time(Note2)	$V_{DS} = 400 \text{ V}, I_D = 20 \text{ A}, V_{GS} = -5 \text{ V} / 18 \text{ V}, R_G = 2.7 \Omega$	$t_{d(ON)}$	-	16	-	ns
Rise Time(Note2)		t_r	-	24	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	27	-	ns
Fall Time(Note2)		t_f	-	7	-	ns
Turn-on Switching Energy		Eon	-	111	-	μ J
Turn-off Switching Energy		Eoff	-	14	-	μ J
Total Switching Energy		Etot	-	125	-	μ J

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximum Body-Diode Continuous Current		I_S	-	-	44	A
Maximum Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	117	A
Drain-Source Diode Forward Voltage	$V_{GS} = -5\text{ V}$, $I_{SD} = 20\text{ A}$	V_{SD}	-	4.2	-	V
Reverse Recovery Time(Note2)	$I_{SD} = 20\text{ A}$, $V_{DD} = 400\text{ V}$, $dI_F / dt = 1000\text{ A}/\mu\text{s}$	t_{rr}	-	17	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	104	-	nC
Peak Reverse Recovery Current		I_{rrm}	-	10	-	A

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1. On-Region Characteristics $T_J = -40^\circ\text{C}$

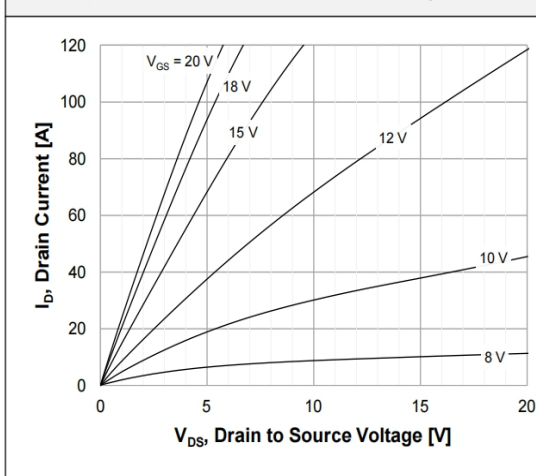


Figure 2. On-Region Characteristics $T_J = 25^\circ\text{C}$

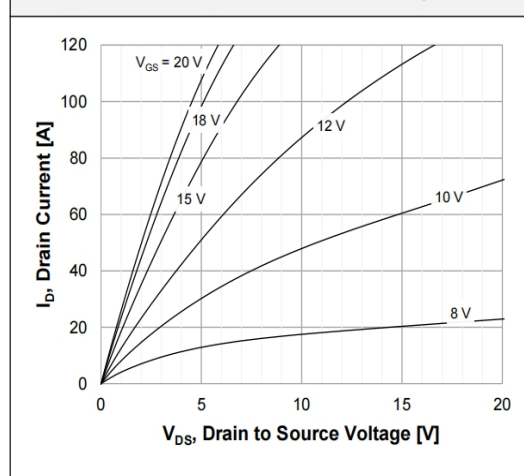


Figure 3. On-Region Characteristics $T_J = 125^\circ\text{C}$

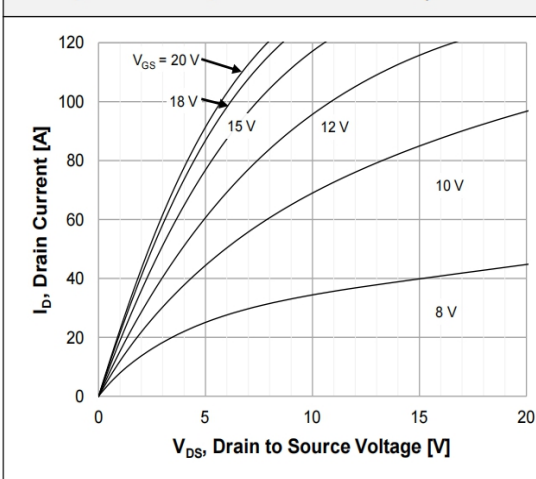
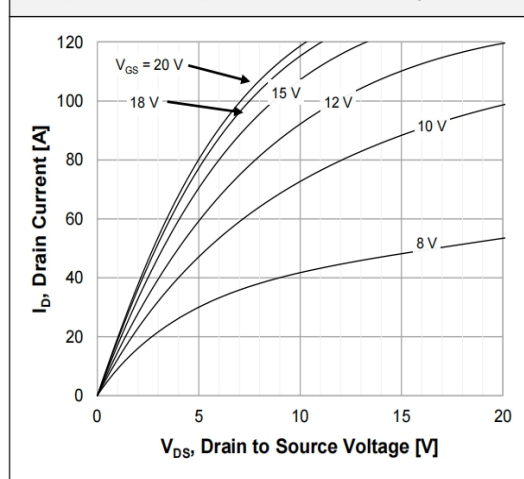


Figure 4. On-Region Characteristics $T_J = 175^\circ\text{C}$



RATINGS AND CHARACTERISTIC CURVES

Figure 5. On-Resistance Characteristics vs. Temperature

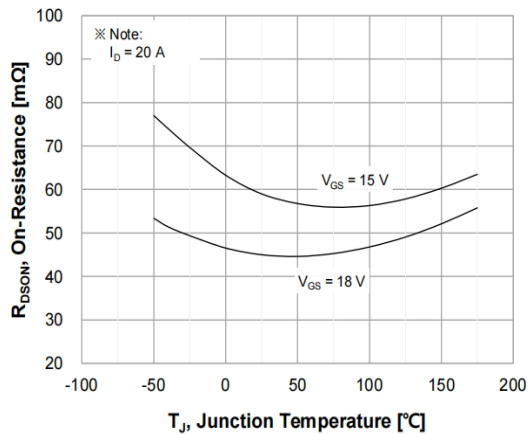


Figure 6. Transfer Characteristics

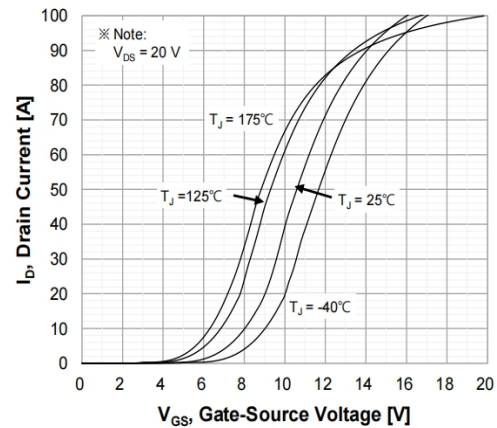


Figure 7. Diode Forward Voltage Characteristics vs. Source-Drain Current $T_J = -40^{\circ}\text{C}$

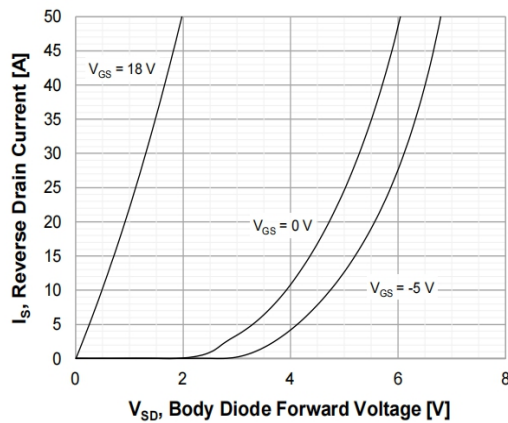


Figure 8. Diode Forward Voltage Characteristics vs. Source-Drain Current $T_J = 25^{\circ}\text{C}$

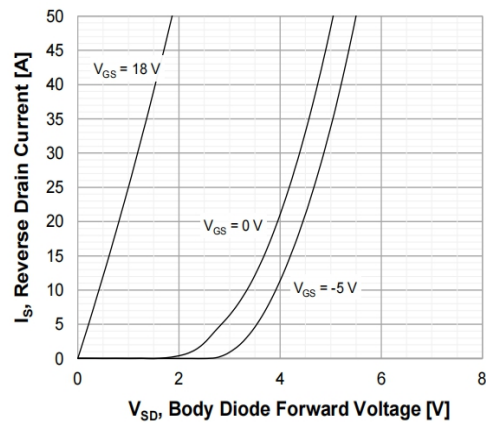


Figure 9. Diode Forward Voltage Characteristics vs. Source-Drain Current $T_J = 125^{\circ}\text{C}$

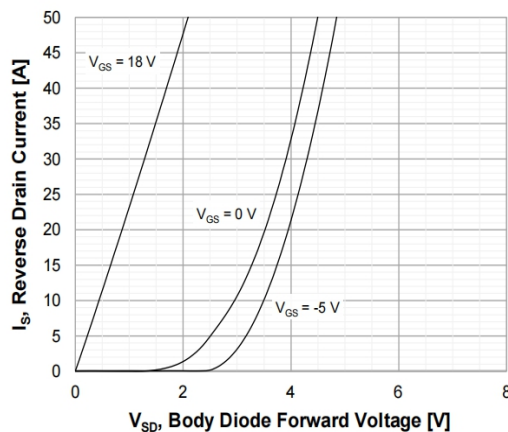
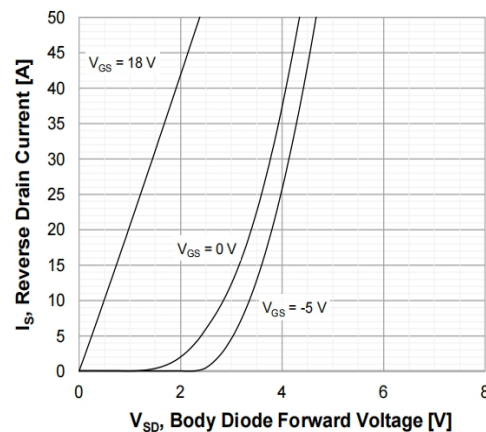


Figure 10. Diode Forward Voltage Characteristics vs. Source-Drain Current $T_J = 175^{\circ}\text{C}$



RATINGS AND CHARACTERISTIC CURVES

Figure 11. Threshold Voltage vs. Temperature

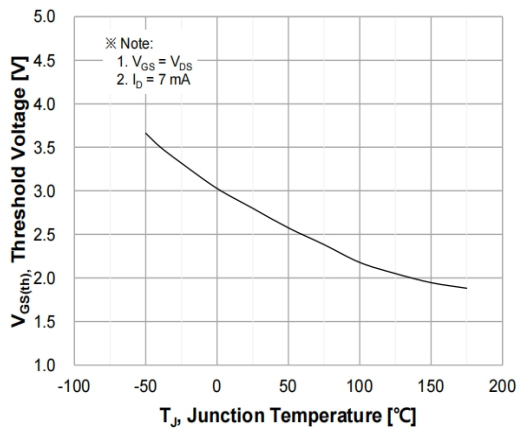


Figure 12. Gate Charge Characteristics

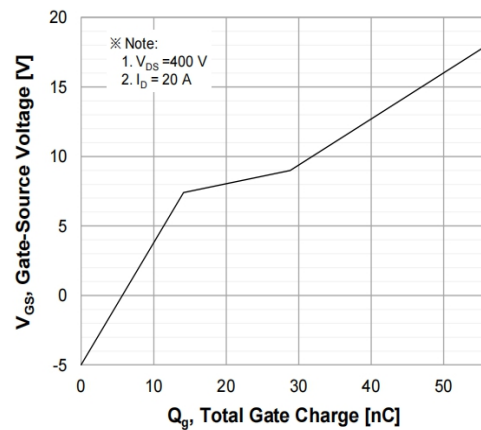


Figure 13. Stored Energy in Output Capacitance

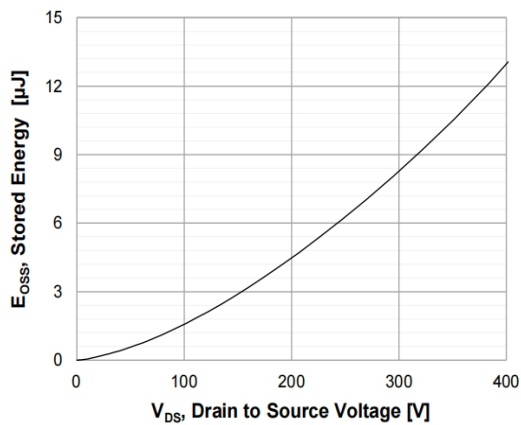


Figure 14. Capacitance Characteristics

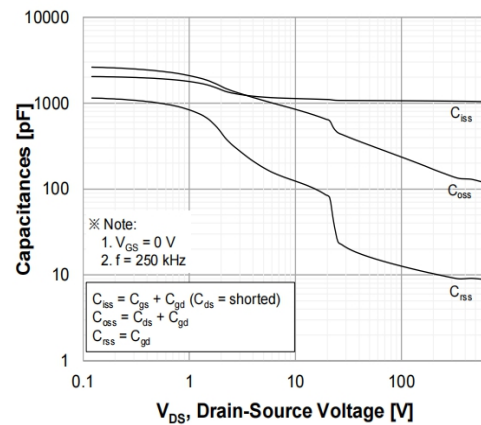


Figure 15. Continuous Drain Current Derating vs. Case Temperature

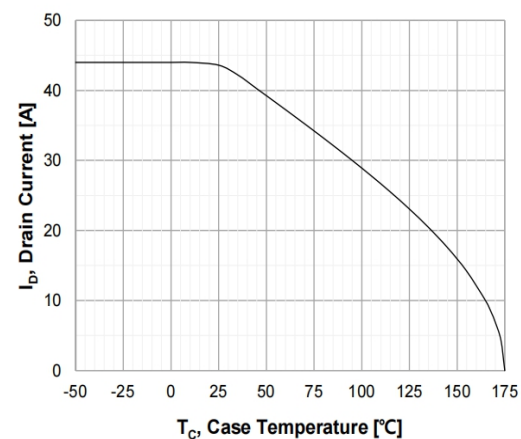
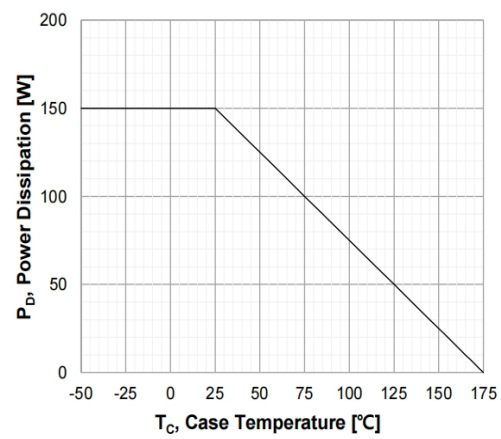


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature



RATINGS AND CHARACTERISTIC CURVES

Figure 17. Typ. Switching Losses vs. Drain Current

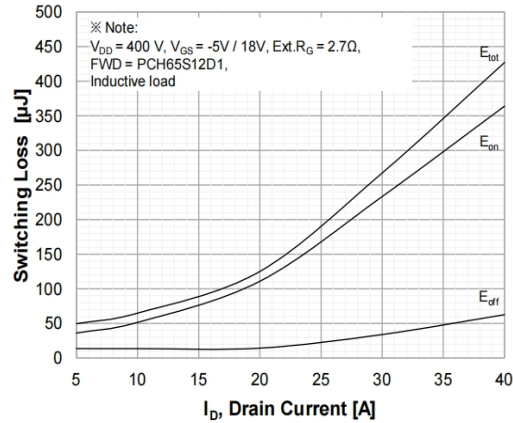


Figure 18. Typ. Switching Losses vs. Gate Resistance

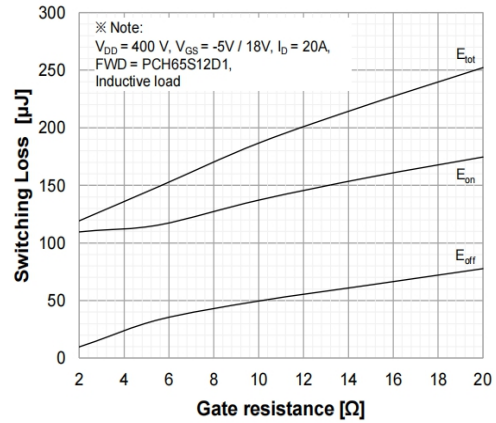


Figure 19. Typ. Switching Losses vs. Drain Current

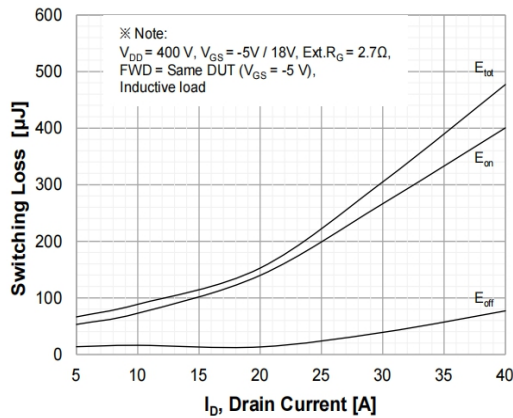


Figure 20. Typ. Switching Losses vs. Gate Resistance

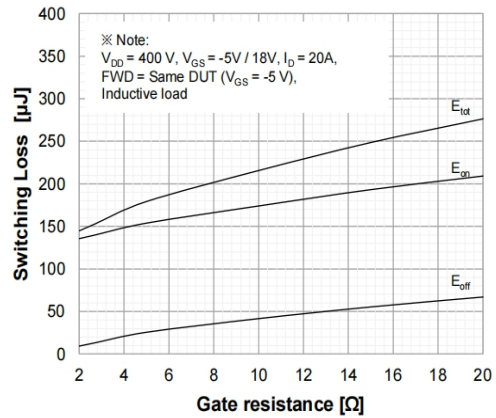


Figure 21. Maximum Safe Operating Area

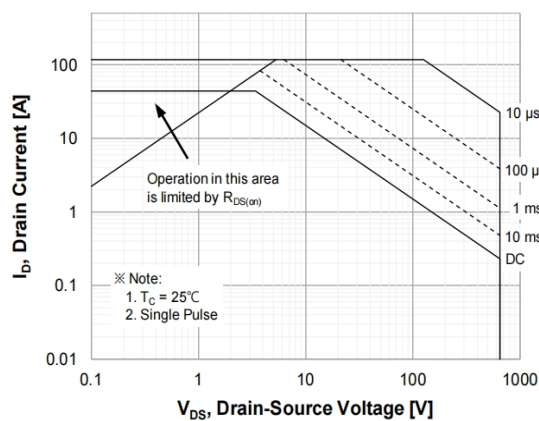
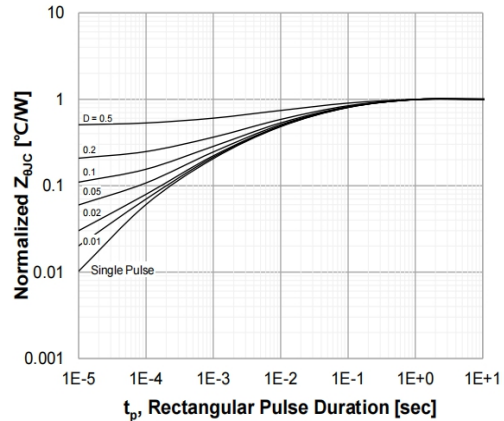
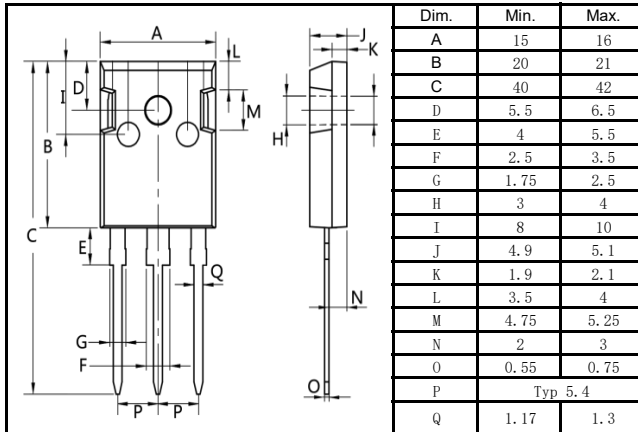


Figure 22. Transient Thermal Response Curve

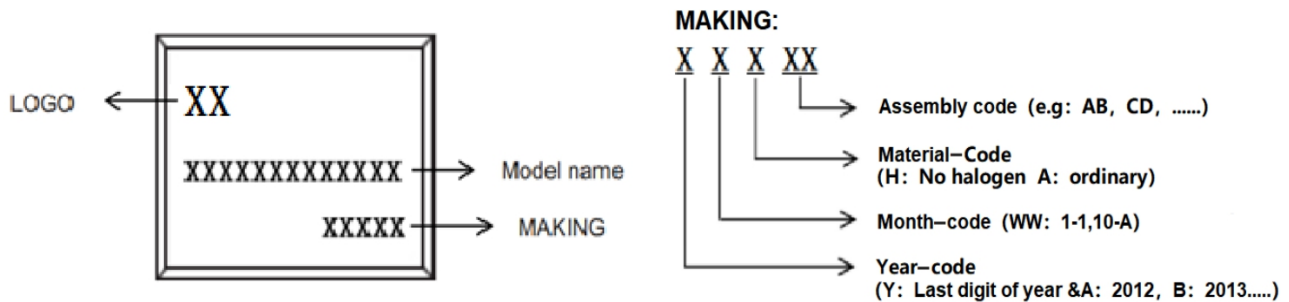


Package Outline Dimensions millimeters

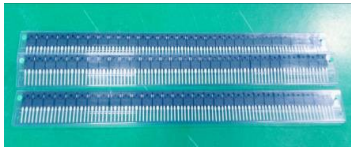
TO-247



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-247			
	30PCS/管	600pcs/盒	3000pcs/箱

Notice

All product, product specifications and data are subject to change without notice to improve. The right to explain is owned by LINGXUN electronics

company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying power exceeding normal rated

power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in