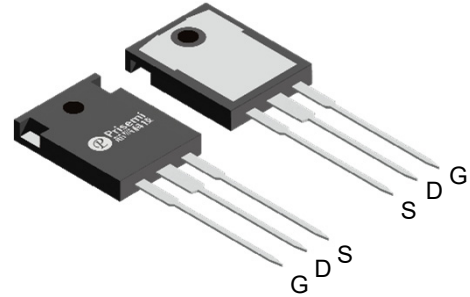


Description

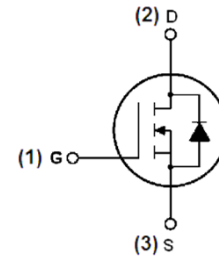
MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
1200	16@ $V_{GS} = 18V$	115


TO-247-3L (Top View)
Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Easy to parallel and simple to drive
- ROHS Compliant, Halogen free

Applications

- EV motor drive
- High Voltage DC/DC Converters
- Switch Mode Power Supplies
- Solar inverters
- EV charging


Schematic diagram
Absolute maximum rating@25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GS}	-10/+22	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	115
		$T_C=100^\circ C$	85
Pulsed Drain Current	I_{DM}	250	A
Power Dissipation	P_D	550	W
Operating Junction Temperature	T_J	-55 to +175	°C
Storage Temperature	T_{STG}	-55 to +175	°C

Thermal Resistance

Parameter	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.27	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	°C/W

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	1200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 1200V, V_{GS} = 0V$	-	-	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = -10 \text{ to } 20V,$ $V_{DS} = 0V$	-	-	250	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 22mA$	2.0	3.0	4.0	V
Recommended turn-on Voltage	V_{GSon}	Static	-	18	-	V
Recommended turn-off Voltage	V_{GSoff}		-	-5.0	-	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 18V, I_D = 50A$	-	16	22	m Ω
		$V_{GS} = 18V, I_D = 50A$ $T_J = 175^\circ C$	-	28	-	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 1000V,$ $f = 1MHz, V_{AC} = 25mV$	-	6878	-	pF
Output Capacitance	C_{oss}		-	288	-	
Reverse Transfer Capacitance	C_{rss}		-	13	-	
Transconductance	g_{fs}	$V_{DS} = 20V, I_D = 50A$	-	51	-	S
C_{OSS} Stored Energy	E_{OSS}	$V_{DS} = 1000V, f = 1MHz$	-	141	-	μJ
Turn-On Energy (Body Diode)	E_{on}	$V_{DS} = 800V, I_D = 50A$ $V_{GS} = -5/+20V,$ $L = 68\mu H, T_J = 175^\circ C$	-	8.2	-	mJ
Turn-Off Energy (Body Diode)	E_{off}		-	3.26	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 800V, I_D = 50A$ $V_{GS} = -5/+20V,$ $R_{ext} = 2.5\Omega, L = 68\mu H$	-	185	-	ns
Turn-on Rise Time	t_r		-	28	-	
Turn-Off Delay Time	$t_{d(off)}$		-	75	-	
Turn-Off Fall Time	t_f		-	26	-	
Total Gate Charge	Q_g	$V_{DS} = 800V, I_D = 50A,$ $V_{GS} = -5/+20V$	-	238	-	nC
Gate-Source Charge	Q_{gs}		-	76.7	-	
Gate-Drain Charge	Q_{gd}		-	78.3	-	
Internal Gate Resistance	$R_{G(int)}$	$f = 1MHz, V_{AC} = 25mV$	-	2.2	-	Ω
Reverse Diode Characteristics						
Forward Voltage	V_{FSD}	$V_{GS} = 0V, I_F = 37.5A$ $T_J = 25^\circ C$	-	3.5	6.0	V
		$V_{GS} = 0V, I_F = 37.5A$ $T_J = 175^\circ C$	-	3.0	6.0	
Reverse Recovery Time	t_{rr}	$V_{DS} = 800V, V_{GS} = -5V,$ $I_F = 50A, T_J = 175^\circ C$ $di/dt = 900A/\mu s$	-	98	-	ns
Reverse Recovery Charge	Q_{rr}		-	613	-	nC
Peak Reverse Recovery Current	I_{mm}		-	18	-	A
Continuous Diode Forward Current	I_S	$V_{GS} = 0V$	-	110	-	A

Typical Characteristics

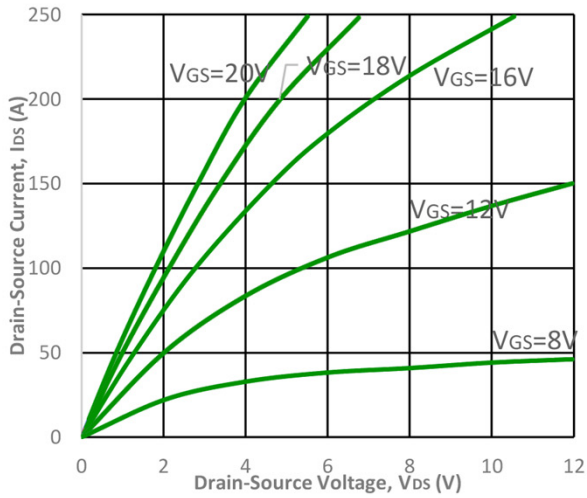


Fig1. Output characteristics ($T_J = 25\text{ }^\circ\text{C}$)

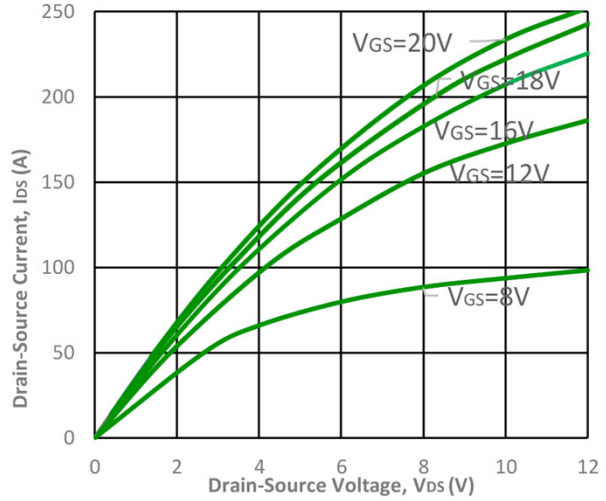


Fig2. Output characteristics ($T_J = 175\text{ }^\circ\text{C}$)

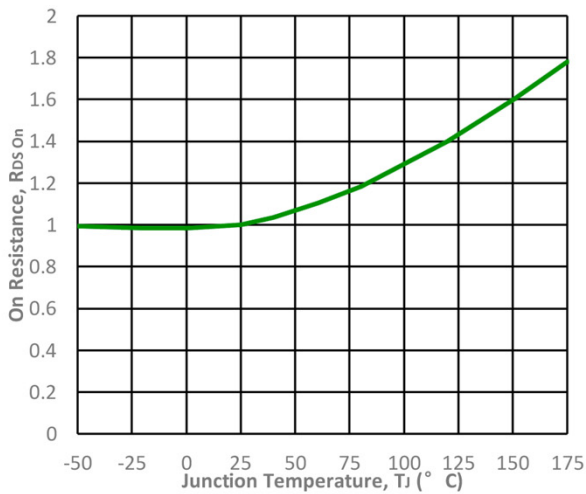


Fig3. Normalized On-Resistance vs. Temperature

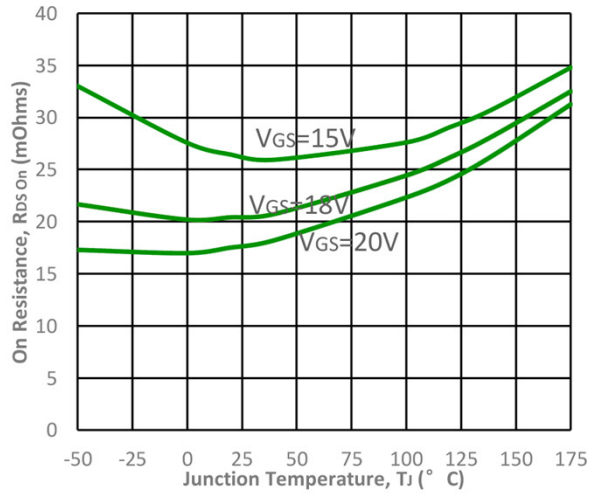


Fig4. On-Resistance vs. Temperature

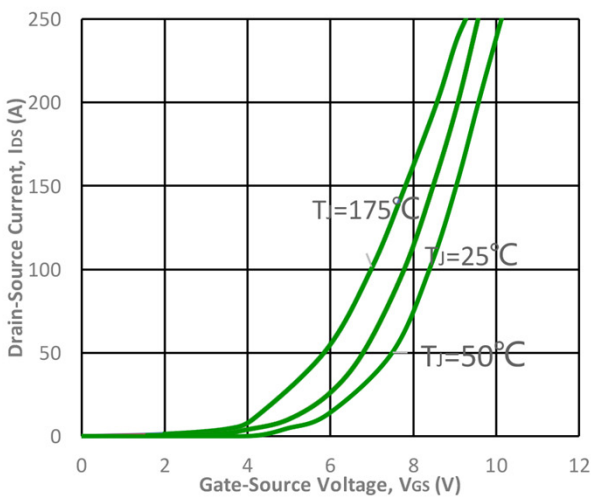


Fig5. Transfer Characteristic

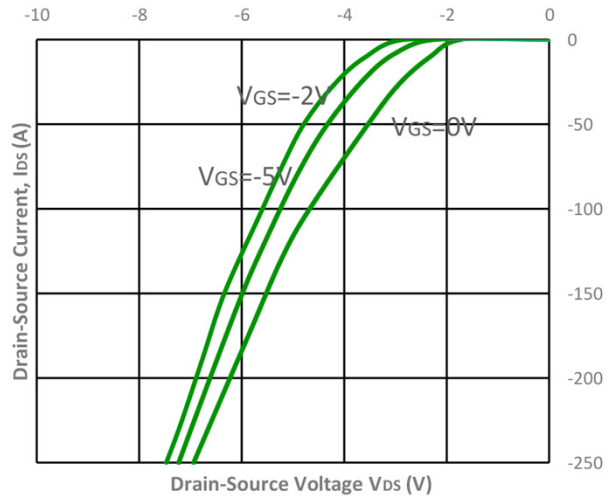


Fig6. Body Diode Characteristic at $25\text{ }^\circ\text{C}$

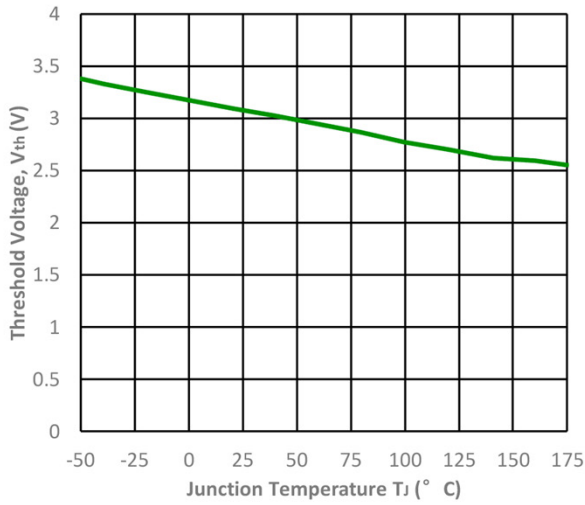


Fig7. Threshold Voltage vs. Temperature

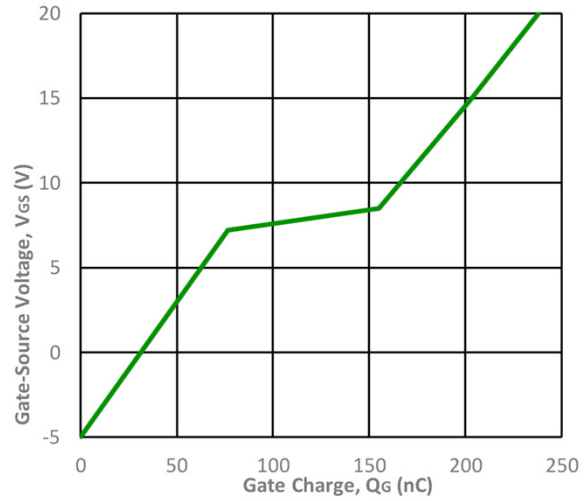


Fig8. Gate Charge Characteristics

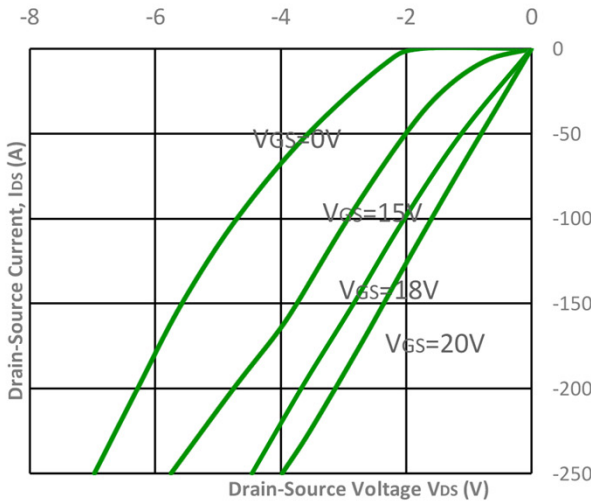


Fig9. 3rd Quadrant Characteristic at 25 °C

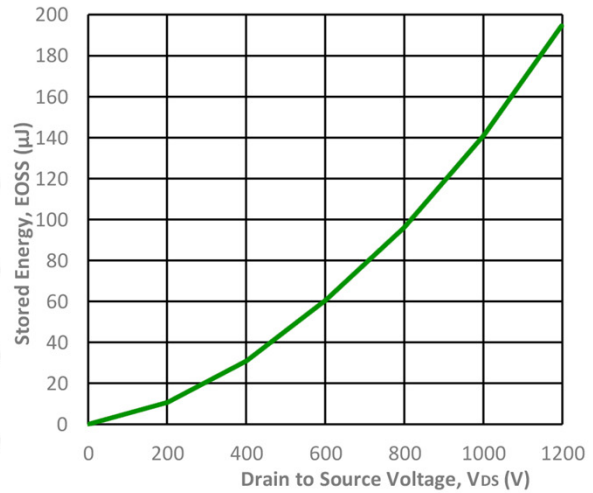


Fig10. Output Capacitor Stored Energy

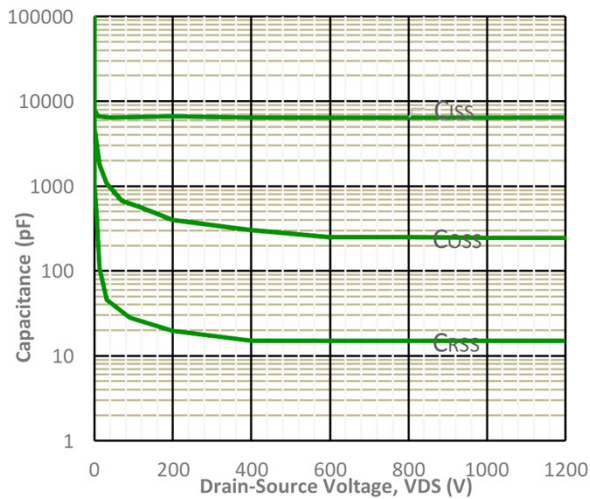


Fig11. Capacitances vs. Drain-Source

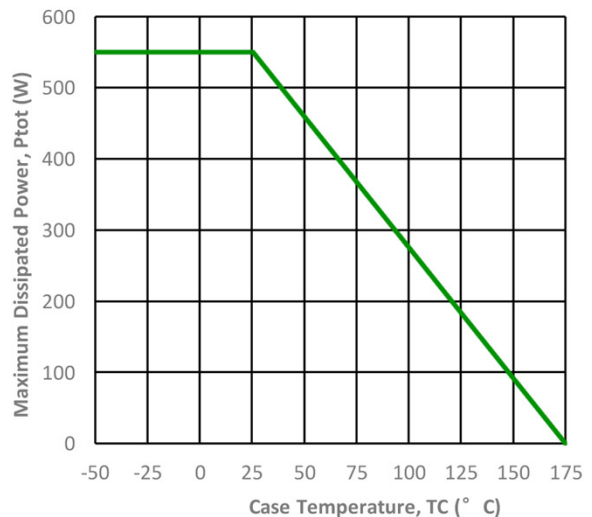


Fig12. Max Power Dissipation Derating Vs Tc

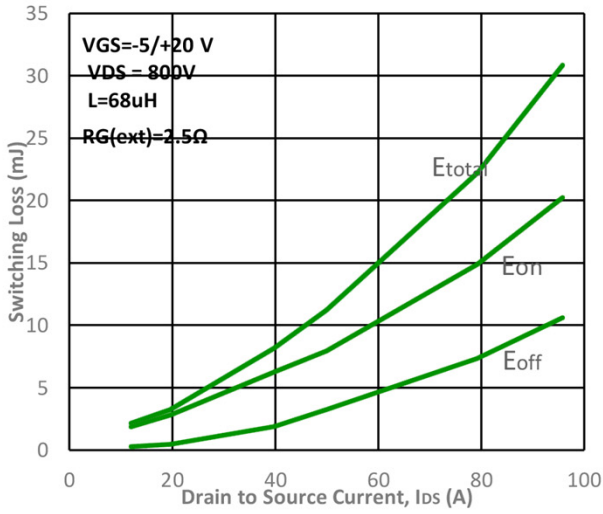


Fig13. Switching Energy vs. Drain Current

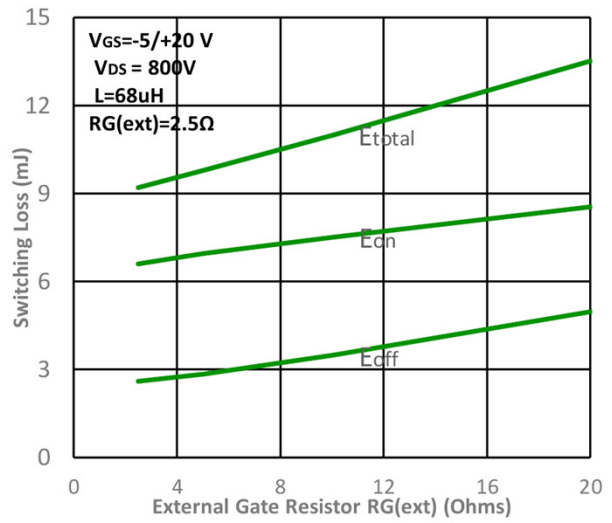


Fig14. Switching Energy vs. RG(ext)

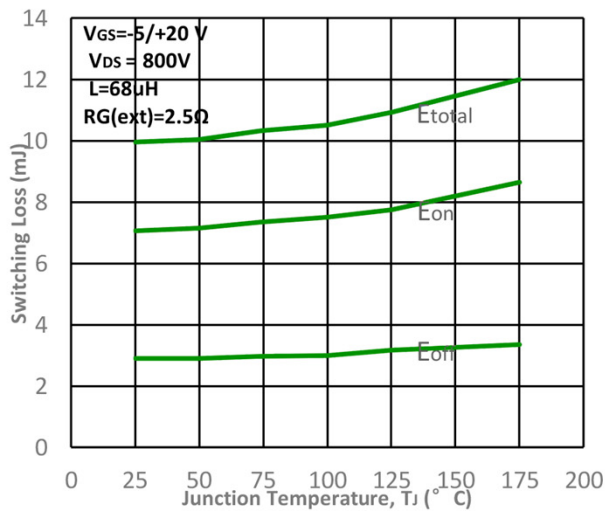


Fig15. Switching Energy vs. Temperature

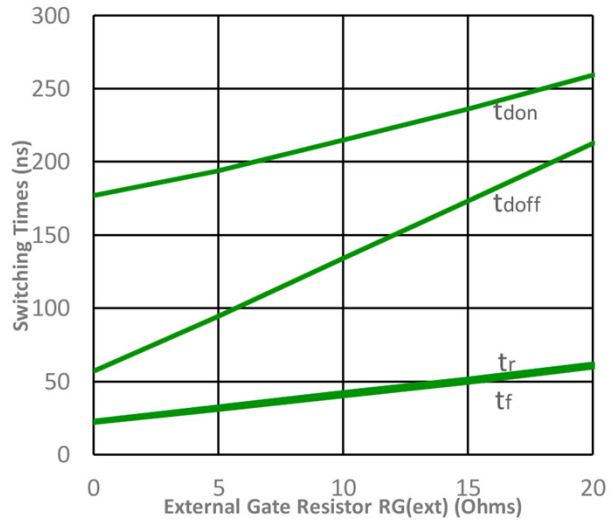


Fig16. Switching Times vs. RG(ext)

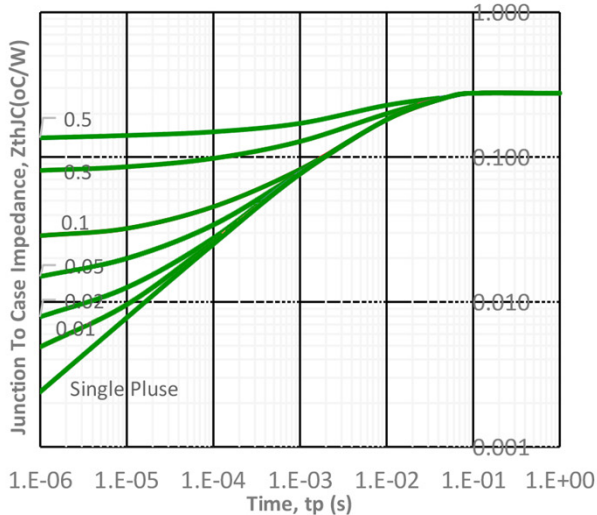


Fig17. Transient Thermal Impedance

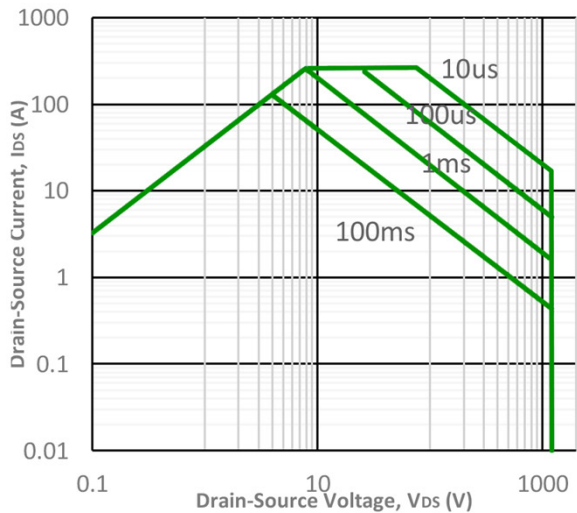
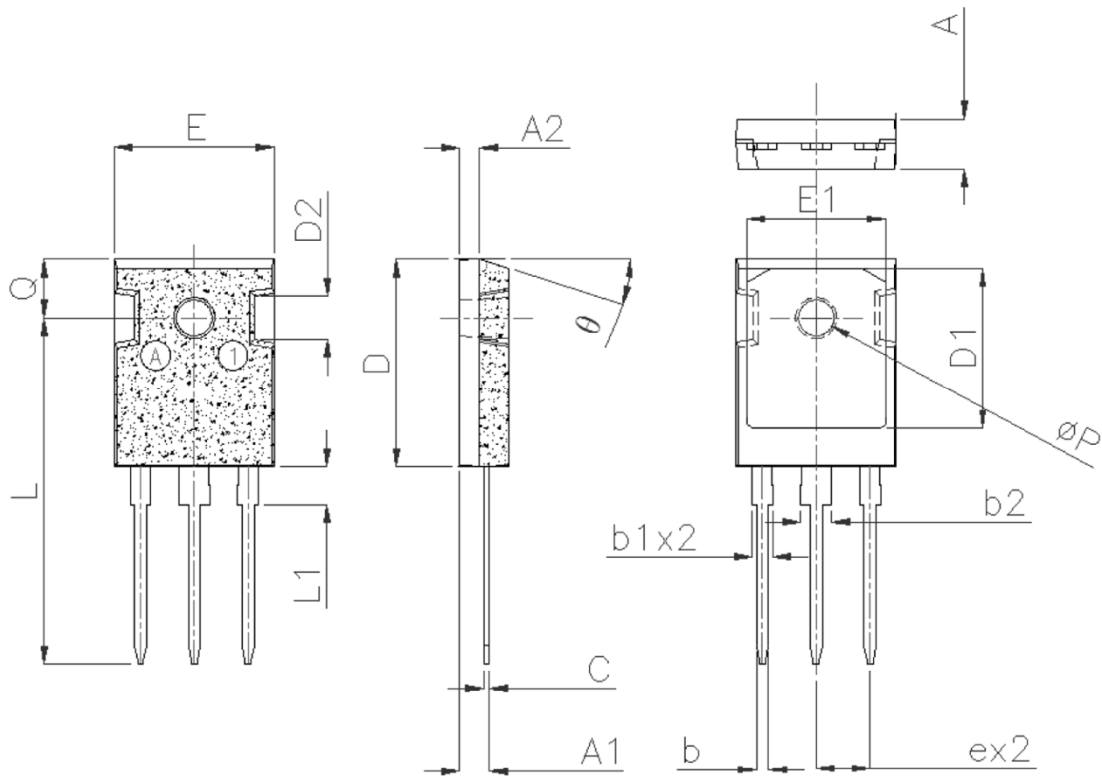



Fig18. Safe Operating Area

Product dimension (TO-247-3L)



Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	4.80	5.20	0.189	0.205	e	5.44 BSC		0.214 BSC	
A1	2.85	3.15	0.112	0.124	E	15.95	16.35	0.628	0.644
b	1.16	1.27	0.046	0.050	E1	13.82	14.26	0.544	0.561
b1	2.03	2.10	0.080	0.083	L	34.65	35.45	1.364	1.396
b2	3.03	3.10	0.119	0.122	L1	-	3.86	-	0.152
C	0.55	0.65	0.022	0.026	Q	5.85	6.05	0.230	0.238
D	20.80	21.20	0.819	0.835	φP	3.45	3.75	0.136	0.148
D1	15.94	16.54	0.628	0.651	θ	17.5°		17.5°	
D2	4.30 BSC		0.169 BSC						


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