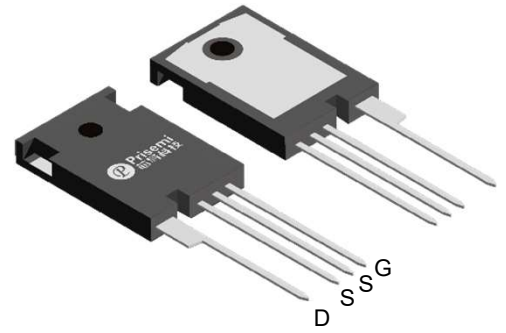


Description

MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
1200	32@ $V_{GS} = 18V$	75

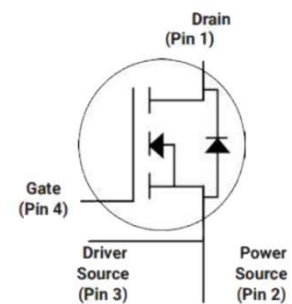

TO-247-4L

Feature

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Avalanche Ruggedness

Applications

- Solar Inverters
- Switch Mode Power Supplies
- UPS
- Battery Chargers


Schematic diagram

Absolute maximum rating@25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GS}	-4/+18	V
Gate-Source Voltage(Absolute Maximum Values)	V_{GSmax}	-8/+22	V
Continuous Drain Current @ $V_{GS}=18V$	I_D	$T_C=25^\circ C$	75
		$T_C=100^\circ C$	54
Pulsed Drain Current	I_{DM}	120	A
Power Dissipation	P_D	357	W
Operating Junction and Storage Temperature	T_J, T_{STG}	-40 to +175	°C

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	-	0.42	°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}	$V_{GS} = 0V, I_D = 100\mu A$	1200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 1200V, V_{GS} = 0V$ $T_C = 25^\circ C$	-	1.0	20	μA
		$V_{DS} = 1200V, V_{GS} = 0V$ $T_C = 175^\circ C$	-	5.0	-	
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = 18V, V_{DS} = 0V$	-	-	100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 10mA$	2.2	3.0	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 18V, I_D = 40A$ $T_J = 25^\circ C$	-	32	40	m Ω
		$V_{GS} = 18V, I_D = 40A$ $T_J = 175^\circ C$	-	59	-	
Transconductance	g_{fs}	$V_{DS} = 20V, I_D = 40A$	-	27	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 1000V, V_{GS} = 0V,$ $V_{AC} = 25mV, f = 1MHz$	-	2766	-	pF
Output Capacitance	C_{oss}		-	125	-	
Reverse Transfer Capacitance	C_{rss}		-	14	-	
Turn-On Switching Energy	E_{on}	$V_{DS} = 800V, I_D = 40A$ $V_{GS} = -4/+15V,$ $R_G = 2.5\Omega, L = 120\mu H$	-	1402	-	μJ
Turn-Off Switching Energy	E_{off}		-	199	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 800V, I_D = 20A$ $V_{GS} = -4/+15V,$ $R_G = 2.5\Omega, L = 120\mu H$	-	14	-	ns
Turn-on Rise Time	t_r		-	23	-	
Turn-Off Delay Time	$t_{d(off)}$		-	31	-	
Turn-Off Fall Time	t_f		-	16	-	
Total Gate Charge	Q_g	$V_{DS} = 800V, I_D = 33.3A,$ $V_{GS} = 0/+15V$	-	112	-	nC
Gate-Source Charge	Q_{gs}		-	28	-	
Gate-Drain Charge	Q_{gd}		-	51	-	
Gate Resistance	R_G	$f = 1MHz, V_{AC} = 25mV$	-	0.6	-	Ω
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = -4V, I_{SD} = 20A$ $T_J = 25^\circ C$	-	5.3	-	V
		$V_{GS} = -4V, I_{SD} = 20A$ $T_J = 175^\circ C$	-	4.8	-	
Reverse Recovery Time	t_{rr}	$V_{DS} = 800V, I_D = 33.3A,$ $di/dt = 1070A/\mu s$	-	55	-	ns
Reverse Recovery Charge	Q_{rr}		-	288	-	μC

Typical Characteristics

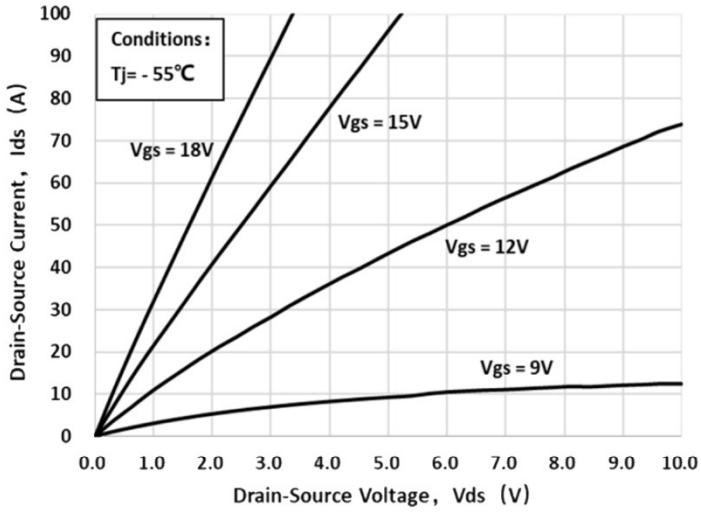


Fig 1. Output Characteristic ($T_J = -55^\circ\text{C}$)

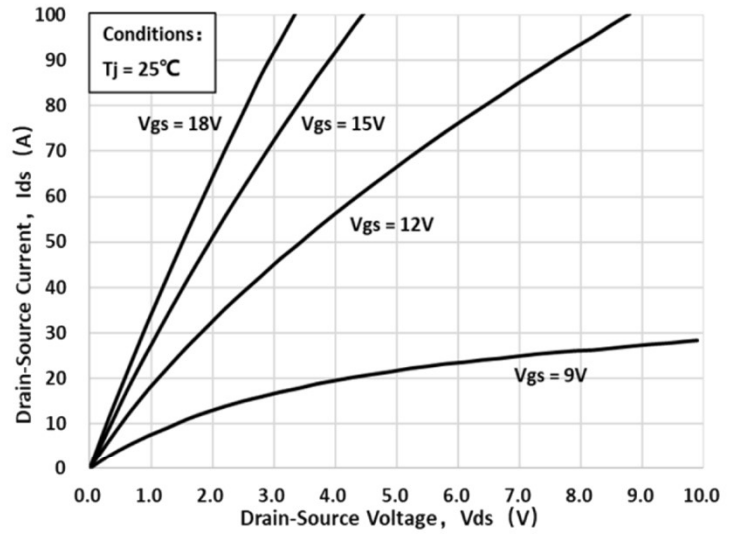


Fig 2. Output Characteristic ($T_J = 25^\circ\text{C}$)

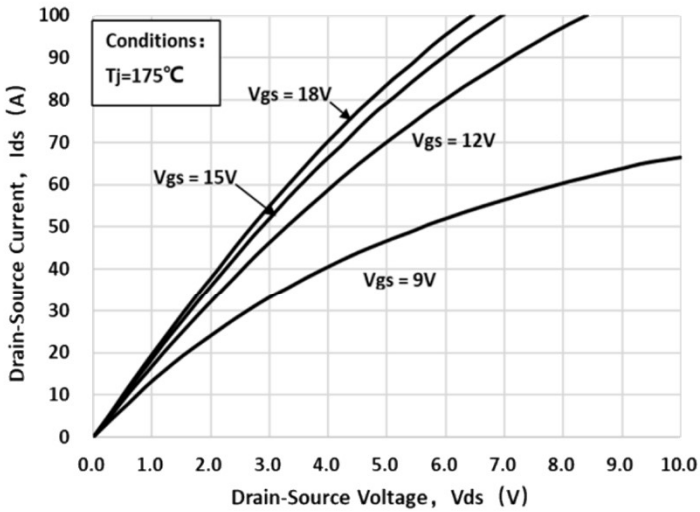


Fig 3. Output Characteristic ($T_J = 175^\circ\text{C}$)

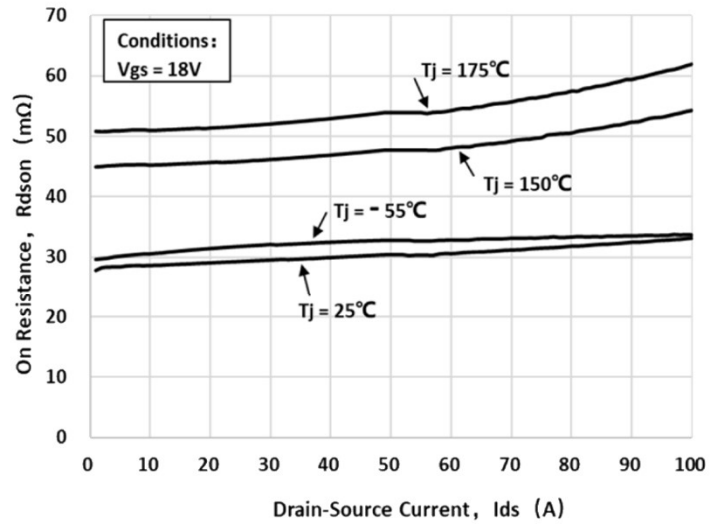


Fig 4: $R_{ds(on)}$ Vs I_{ds} Characteristic

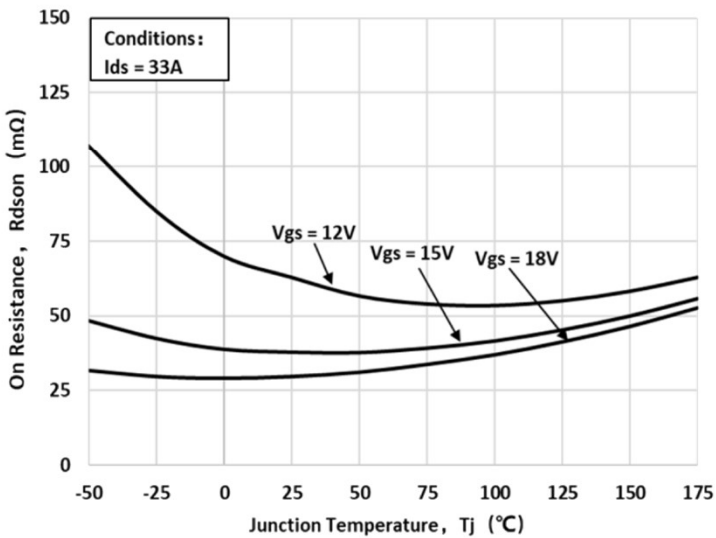


Fig 5: $R_{ds(on)}$ vs. Temperature

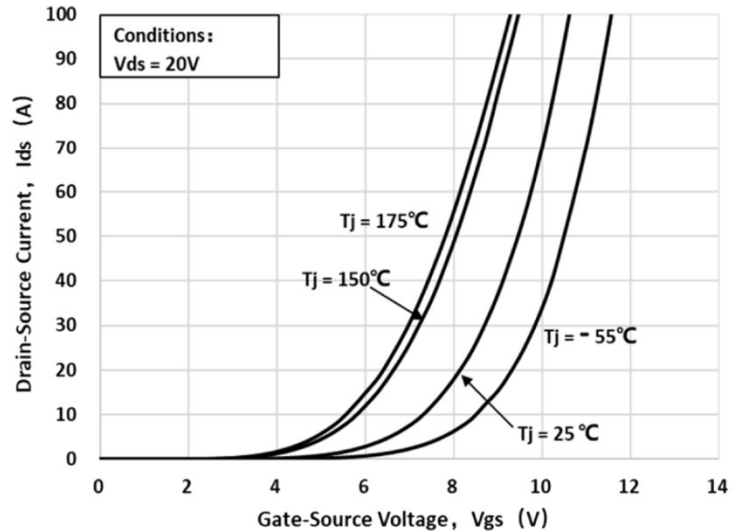


Fig 6: Transfer Characteristic

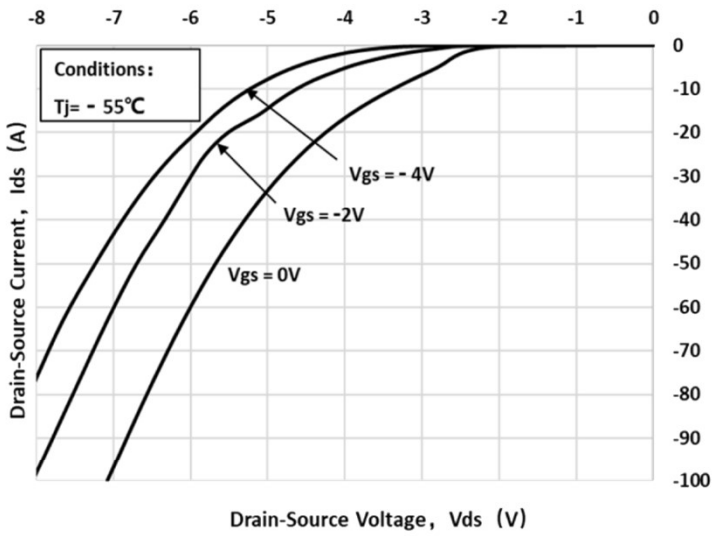


Fig 7: Body-diode Characteristic ($T_J = -55^\circ\text{C}$)

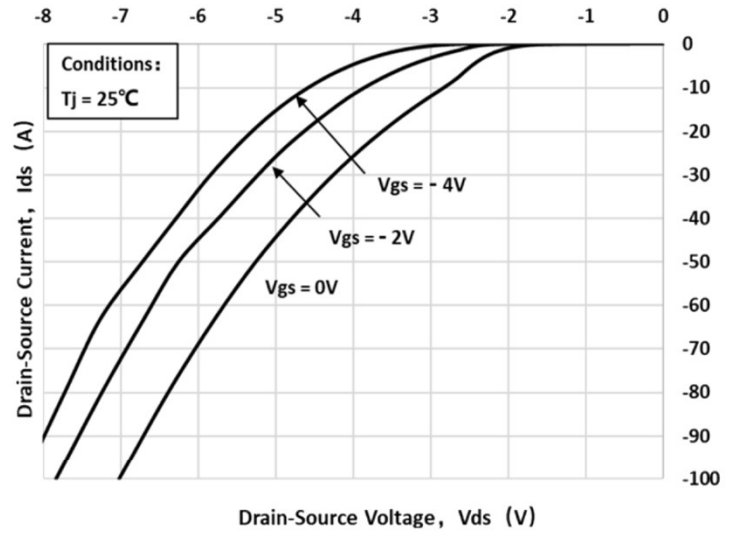


Fig 8: Body-diode Characteristic ($T_J = 25^\circ\text{C}$)

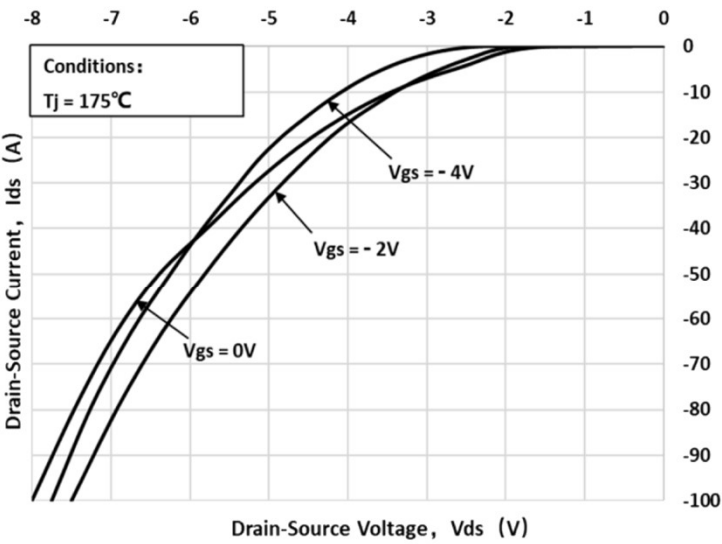


Fig 9: Body-diode Characteristic ($T_J = 175^\circ\text{C}$)

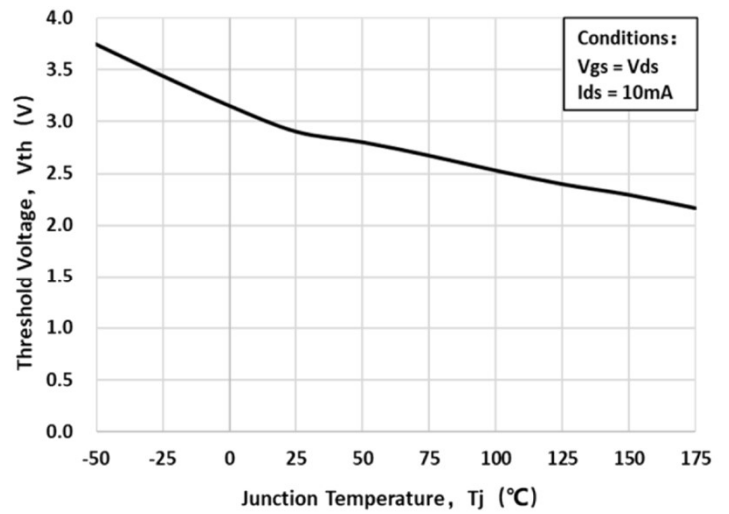


Fig 10: V_{TH} Vs T_J Temperature Characteristic

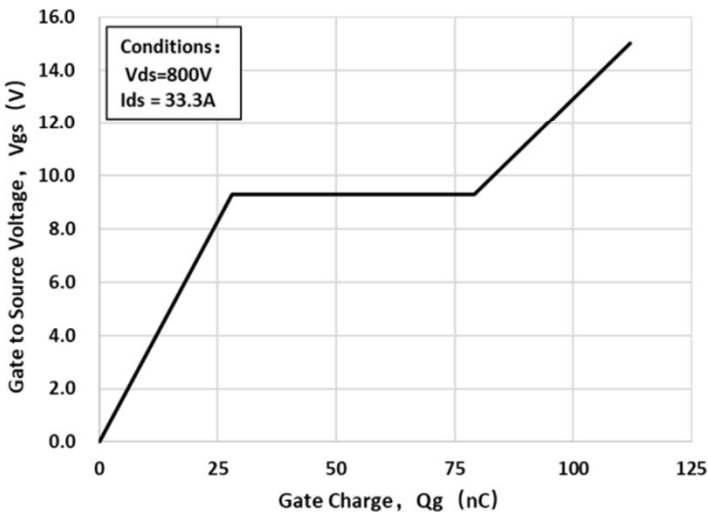


Fig 11: Gate Charge Characteristics

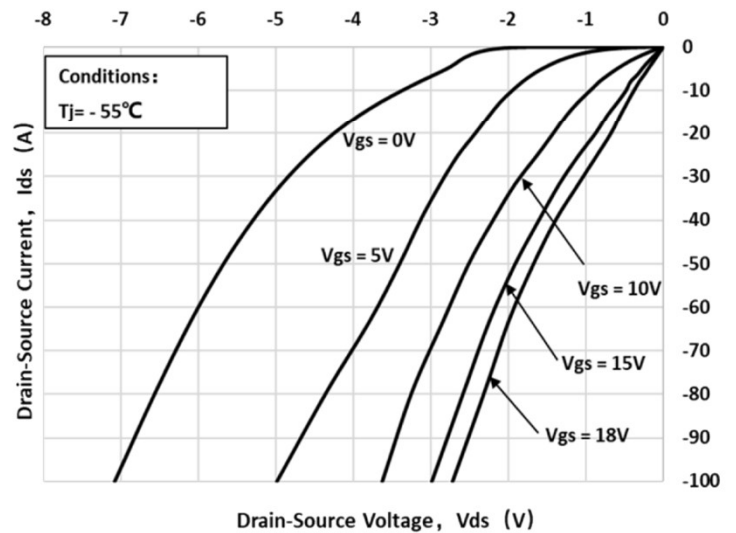


Fig 12: 3rd Quadrant Characteristic ($T_J = -55^\circ\text{C}$)

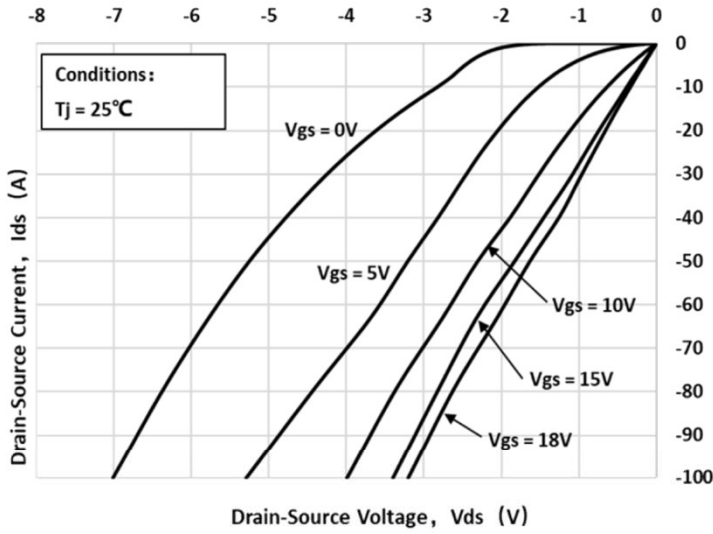


Fig 13: 3rd Quadrant Characteristic($T_J=25^\circ\text{C}$)

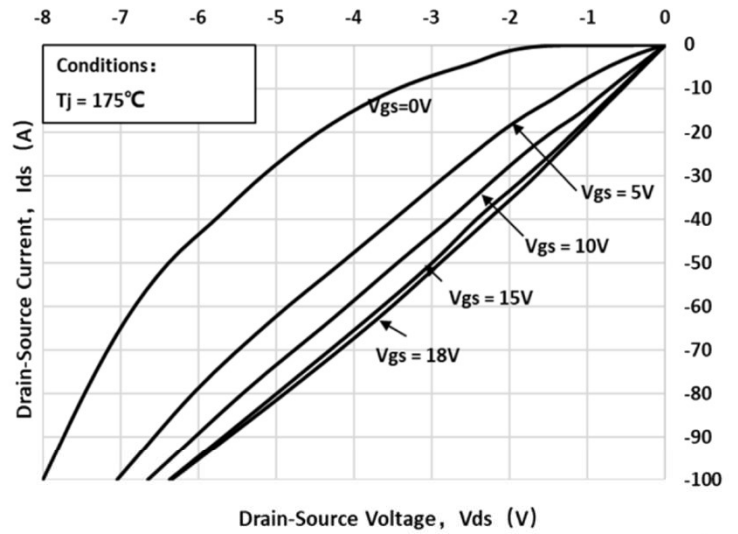


Fig 14: 3rd Quadrant Characteristic($T_J=175^\circ\text{C}$)

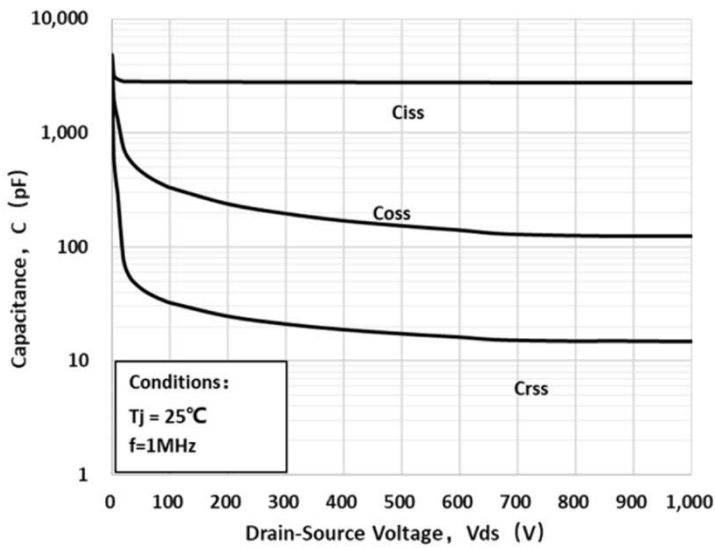


Fig 15: Capacitance Characteristic

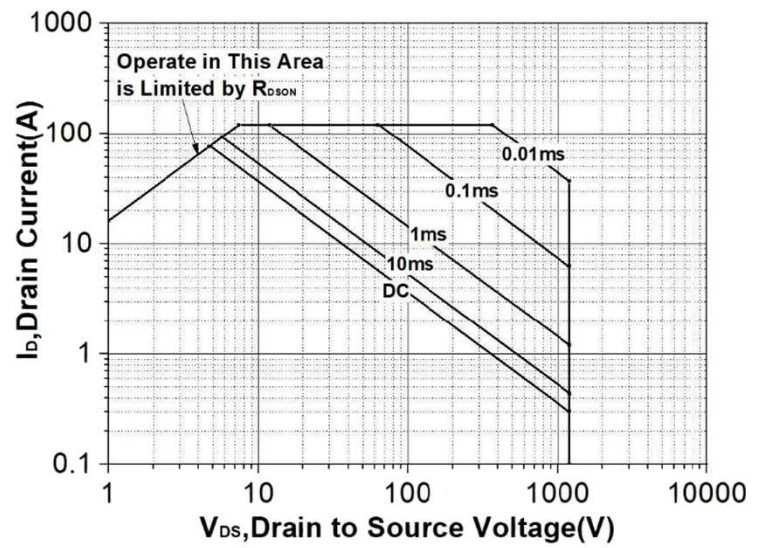


Fig 16: Safe Operating Area

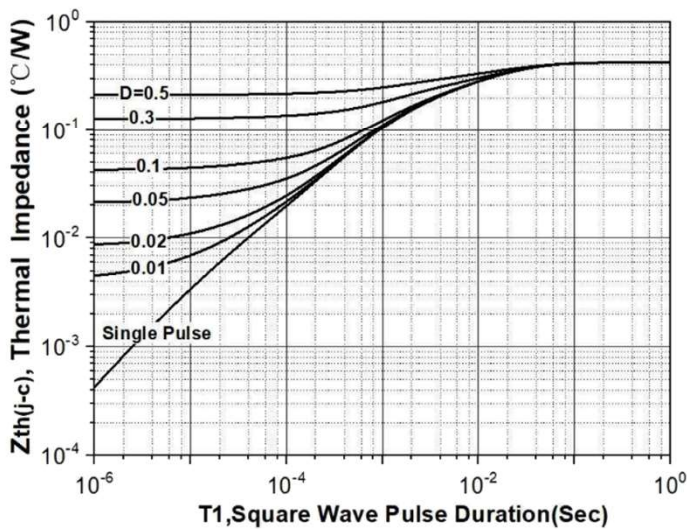
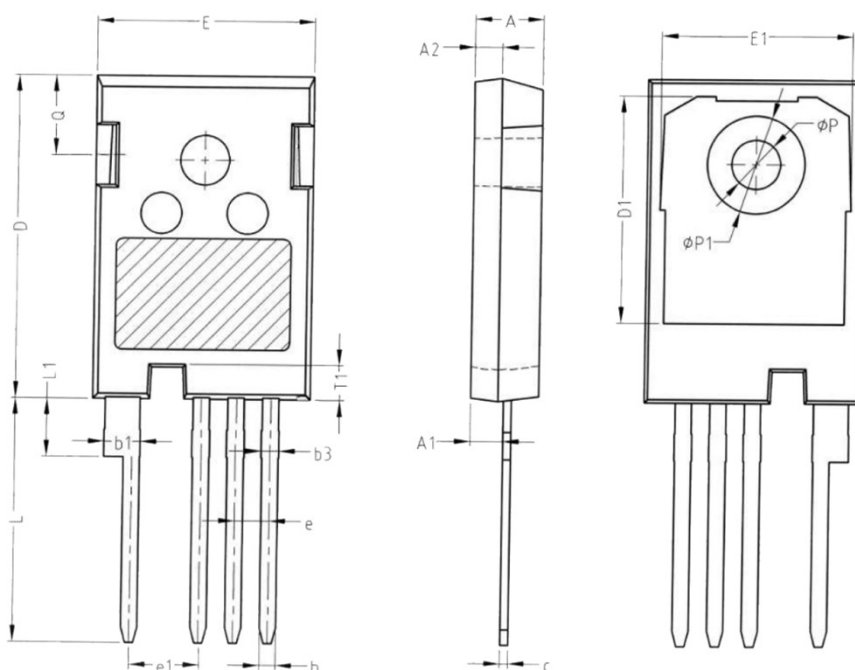



Fig 17: Transient Thermal Impedance

Product dimension (TO-247-4L)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	4.80	5.20	0.189	0.205
A1	2.21	2.61	0.087	0.103
A2	1.80	2.20	0.071	0.087
b	1.06	1.36	0.042	0.054
b1	2.33	2.93	0.092	0.115
b3	1.07	1.60	0.042	0.063
c	0.51	0.75	0.020	0.030
D	23.30	23.60	0.917	0.929
D1	16.25	16.85	0.640	0.663
E	15.74	16.14	0.620	0.635
E1	13.72	14.32	0.540	0.564
T1	2.35	2.65	0.093	0.104
e	2.54 BSC		0.100 BSC	
e1	5.08 BSC		0.200 BSC	
Q	5.49	6.09	0.216	0.240
L	17.27	17.87	0.680	0.704
L1	3.99	4.39	0.157	0.173
φP	3.40	3.80	0.134	0.150
φP1	7.19 Ref.		0.283 Ref.	


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