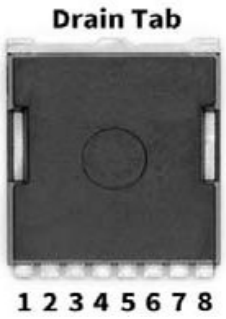
Description

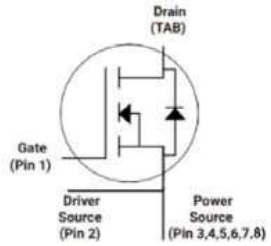
MOSFET Product Summary		
V_{DS}(V)	$R_{DS(on)}$(mΩ)	I_D(A)
1200	40@ V_{GS} = 15V	68



TOLL (Top View)

Feature

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



Schematic diagram

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC-DC Converters
- Batterry Chargers

Absolute maximum rating@25℃

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}=15V	T_C=25℃	I_D	68	A
	T_C=100℃		48	
Pulsed drain current (T_C = 25°C, tp limited by T_{jmax})		$I_{D\ pulse}$	120	A
Power Dissipation		P_D	357	W
Operating Junction Temperature		T_J	-40 to +175	℃
Storage Temperature		T_{STG}	-40 to +175	℃

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	-	-	0.43	℃/W

Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Units
Statistic Characteristics							
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V,I_D = 100μA		1200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 1200V, V_{GS}=0V T_C=25℃		-	1	20	μA
		V_{DS} = 1200V, V_{GS}=0V T_C=175℃		-	5	-	
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	4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=15V, I_D=33.3A	T_j=25℃	-	40	52	mΩ
			T_j=175℃	-	62	-	
		V_{GS}=18V, I_D=33.3A	T_j=25℃	-	32	40	mΩ
			T_j=175℃	-	59	-	
Transconductance	g_{fs}	V_{DS} = 20V,I_D = 33.3A		-	20	-	S
Dynamic Characteristics							
Input Capacitance	C_{lss}	V_{DS} = 1000V,V_{GS} = 0V, f = 1MHz, V_{AC} =25mV		-	2766	-	pF
Output Capacitance	C_{oss}			-	125	-	
Reverse Transfer Capacitance	C_{rss}			-	14	-	
Turn-On Switching Energy	E_{on}	V_{DD} = 800V, I_D = 20A V_{GS} = -4/+15V, R_G = 2.5Ω,L = 120 μH		-	701	-	μJ
Turn-Off Switching Energy	E_{off}			-	79	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 800V, I_D = 33.3A V_{GS} = 0/+15V,		-	13.4	-	ns
Turn-on Rise Time	t_r			-	5.4	-	
Turn-Off Delay Time	$t_{d(off)}$			-	32	-	
Turn-Off Fall Time	t_f			-	19	-	
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℃		-	5.3	-	V
		V_{GS} = -4V,I_{SD} = 20A T_J=175℃		-	4.8	-	
Reverse Recovery Time	t_{rr}	V_R=800V, I_{SD}=33.3A, T_J=25℃, di/dt=1070A/μs		-	55	-	ns
Reverse Recovery Charge	Q_{rr}			-	288	-	μC

Typical Characteristics

Fig 1. Output Characteristic (T_J=-55℃)

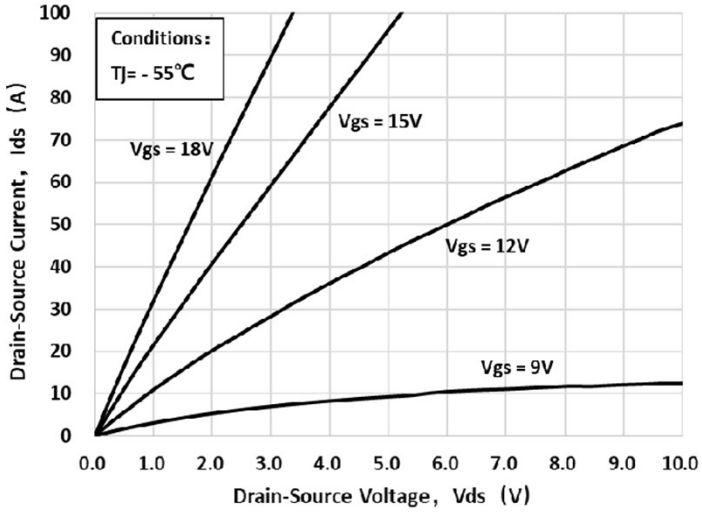


Fig 2. Output Characteristic (T_J=25℃)

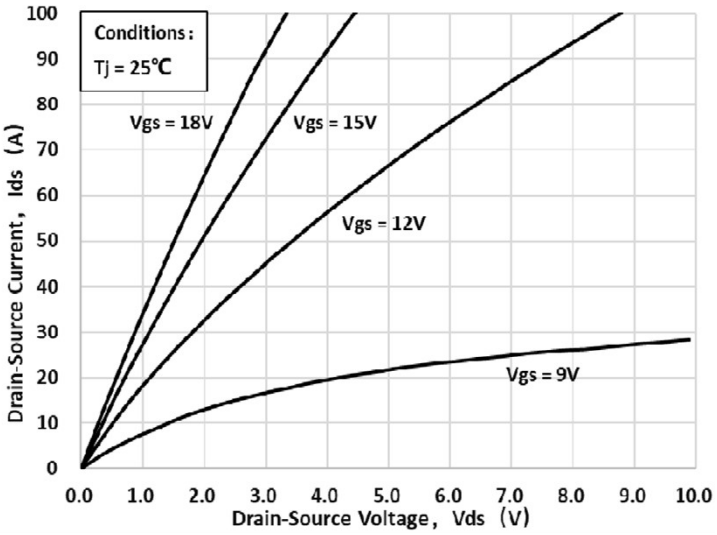


Fig 3. Output Characteristic (T_J=175℃)

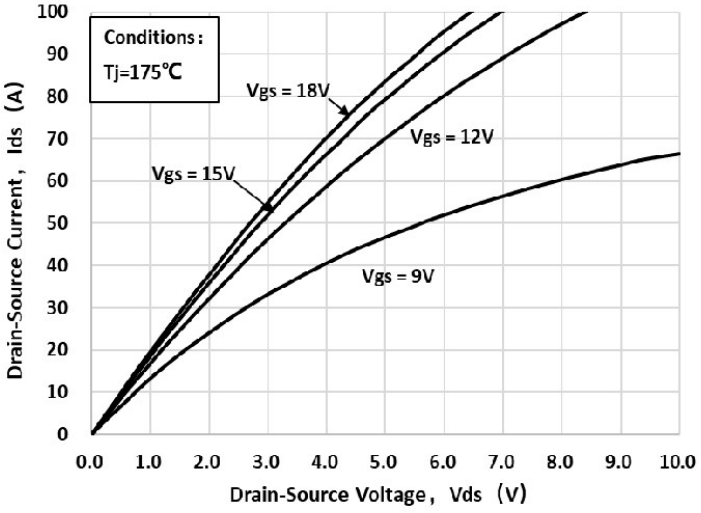


Fig 4: Rdson Vs Ids Characteristic

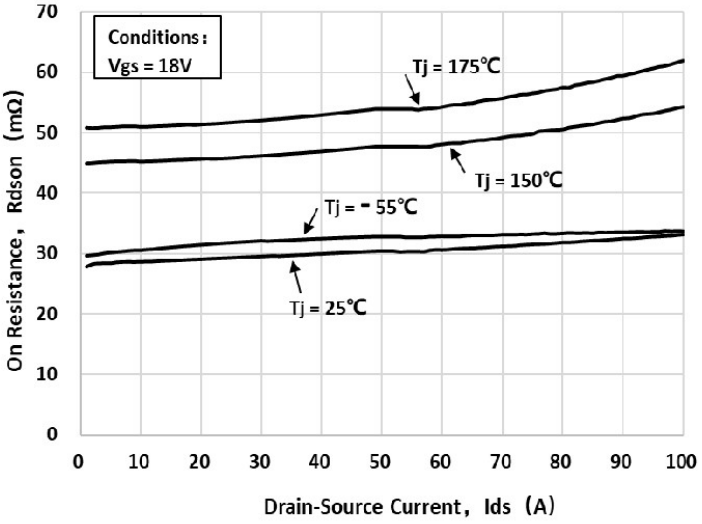


Fig 5: Rds(on) vs. Temperature

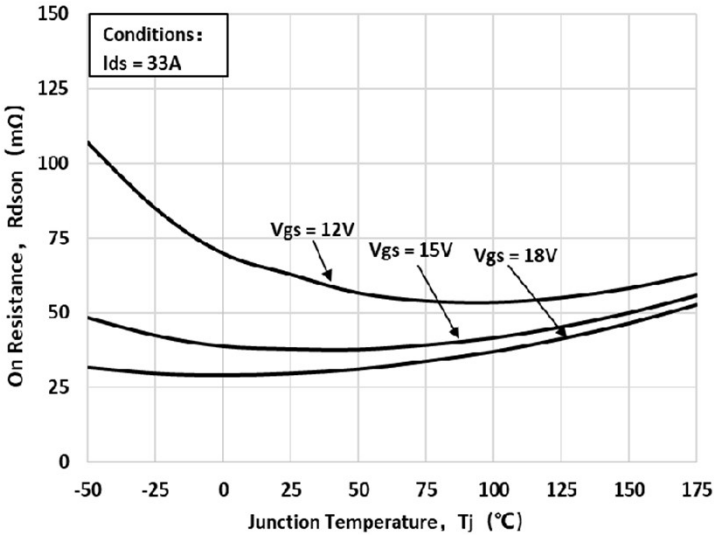


Fig 6: Transfer Characteristic

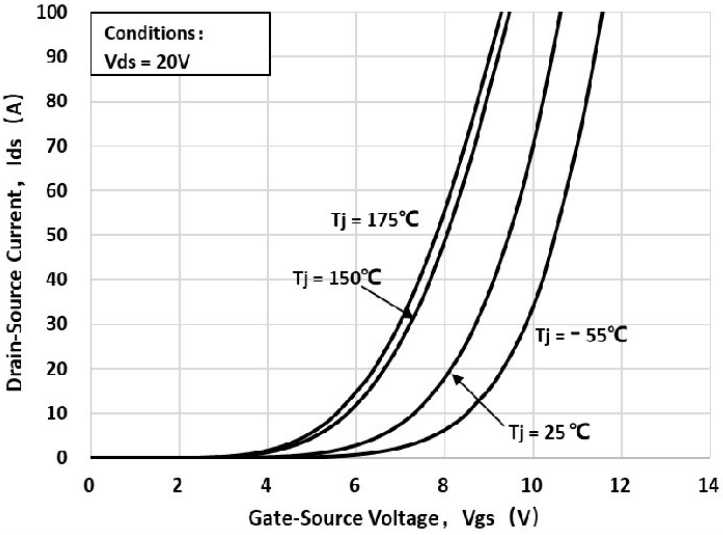


Fig 7: Body-diode Characteristic (T_J=-55℃)

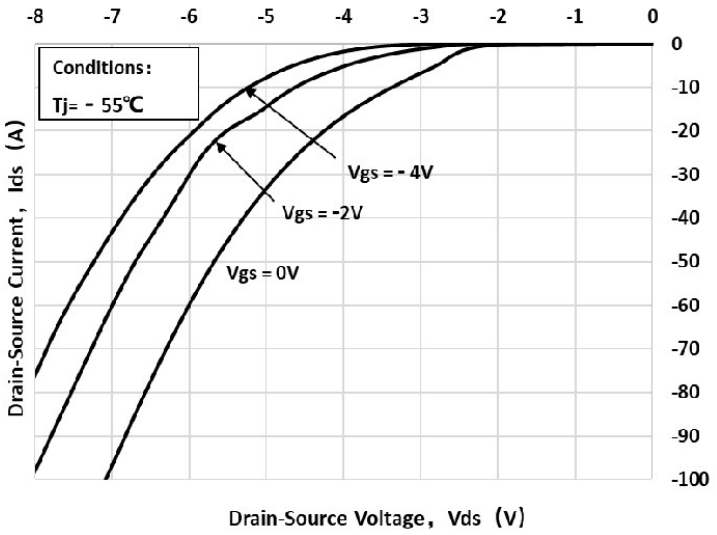


Fig 8: Body-diode Characteristic (T_J=25℃)

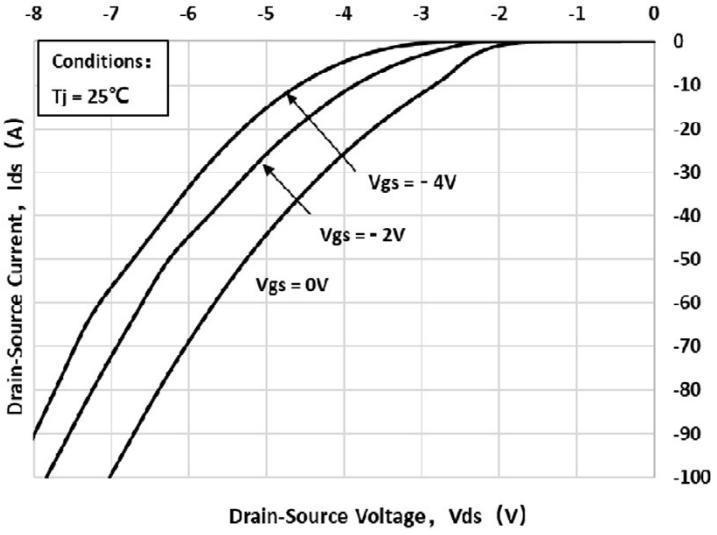


Fig 9: Body-diode Characteristic (T_J=175℃)

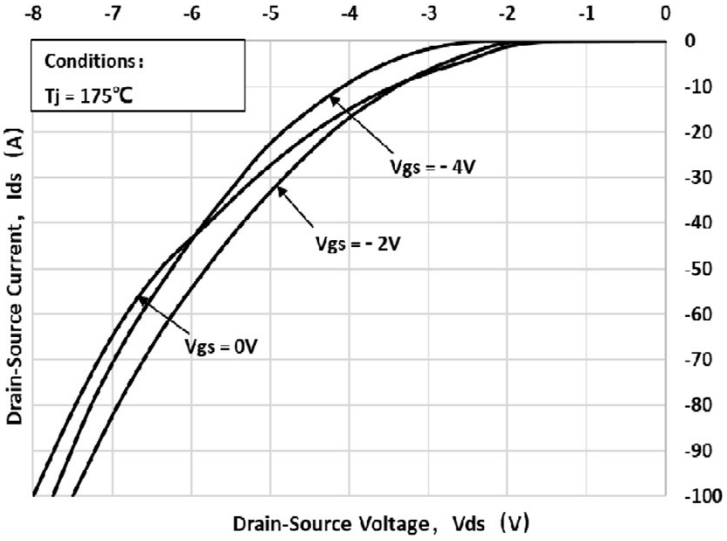


Fig 10: V_{TH} Vs T_J Temperature Characteristic

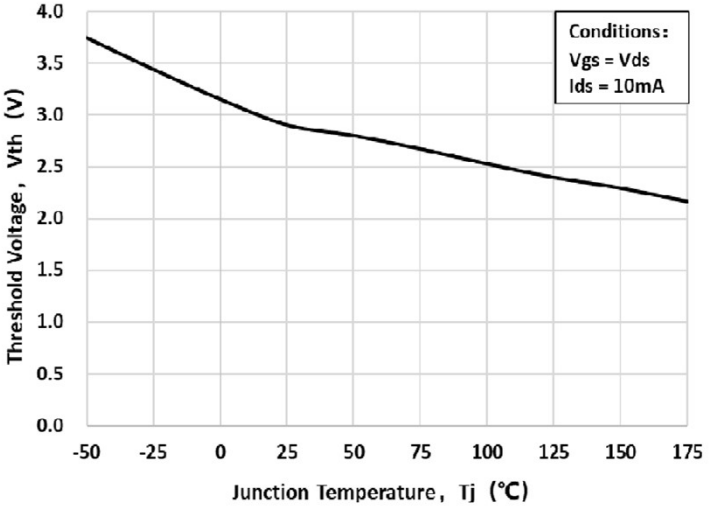


Fig 11: Gate Charge Characteristics

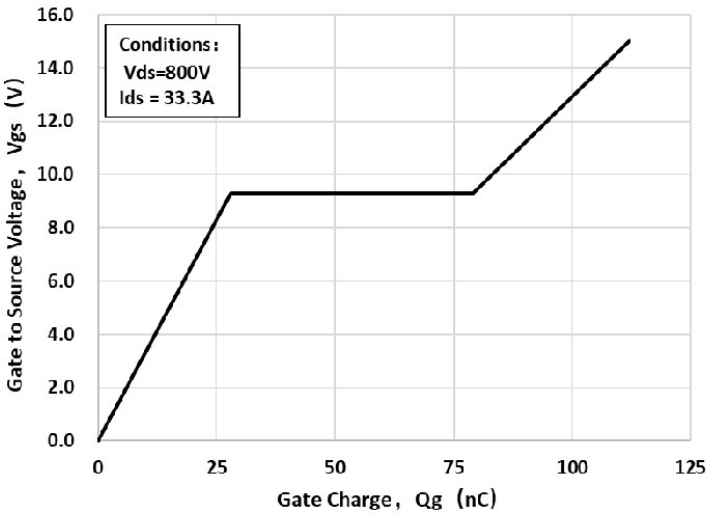


Fig 12: 3rd Quadrant Characteristic(T_J=-55℃)

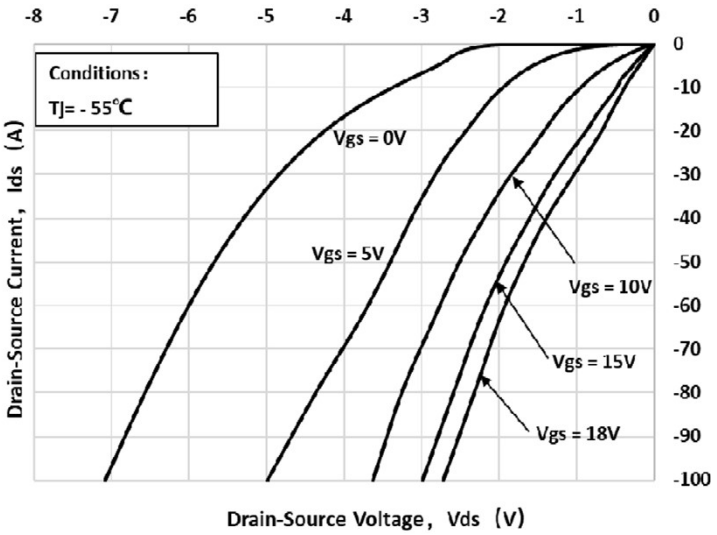


Fig 13: 3rd Quadrant Characteristic(T_J=25℃)

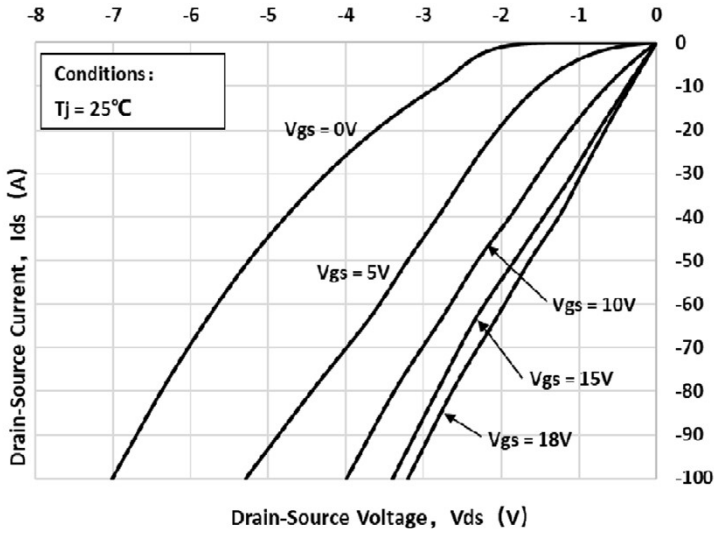


Fig 14: 3rd Quadrant Characteristic(T_J=175℃)

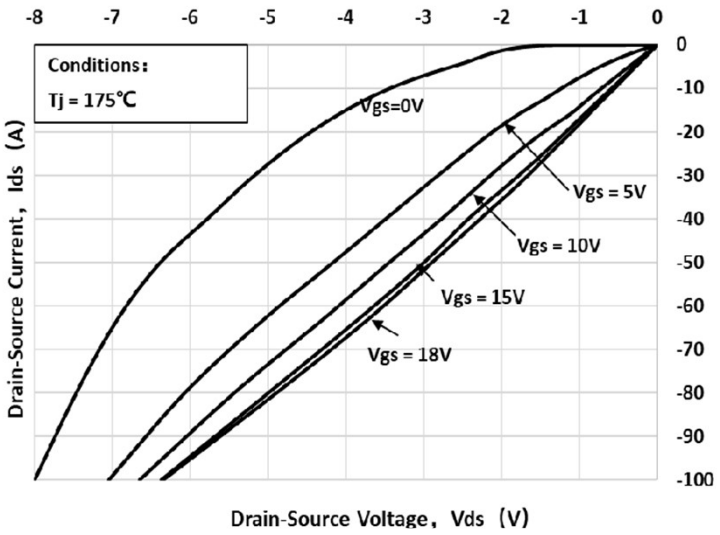


Fig 15: Capacitance Characteristic

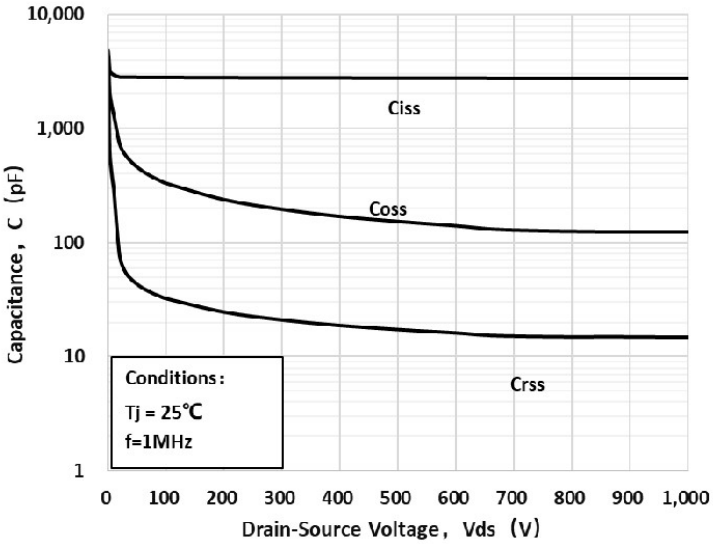


Fig 16: Safe Operating Area

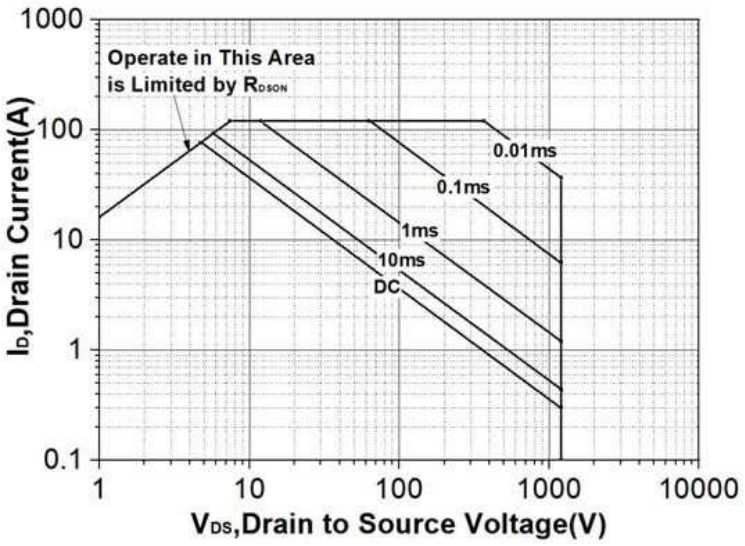
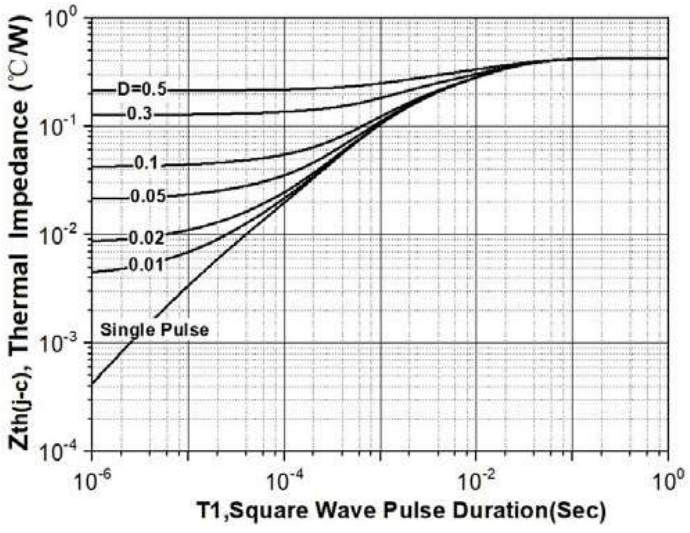
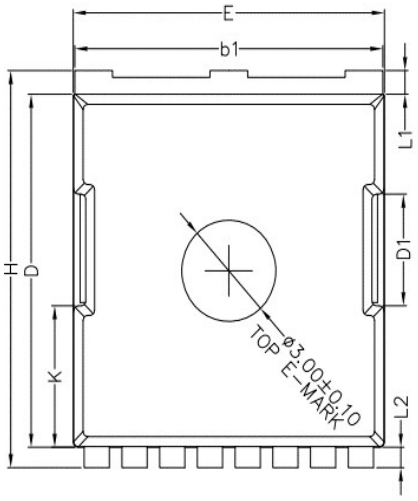


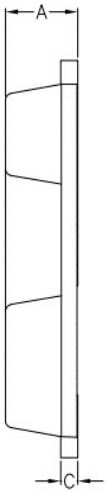
Fig 17: Transient Thermal Impedance



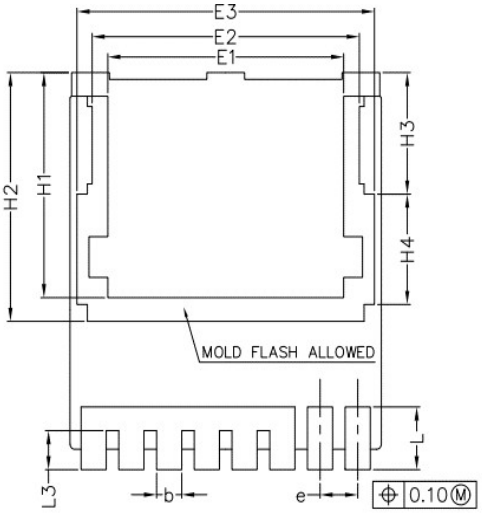
Product dimension (TO-247-3L)



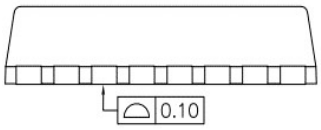
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
c	0.40	0.50	0.60
D	10.28	10.43	10.58
D1	3.15	3.30	3.45
E	9.70	9.90	10.10
E1	7.35	7.50	7.65
E2	8.35	8.50	8.65
E3	9.31	9.46	9.61
e	1.10	1.20	1.30
H	11.48	11.73	11.88
H1	6.55	6.65	6.75
H2	7.20	7.35	7.50
H3	3.44	3.59	3.74
H4	3.11	3.26	3.41
K	4.03	4.18	4.33
L	1.60	1.85	2.10
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30

NOTES: ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSION.

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