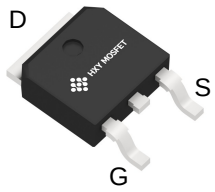
IPD90P03P4L04ATMA1

P-Channel Enhancement Mode MOSFET

Description

The IPD90P03P4L04ATMA1 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

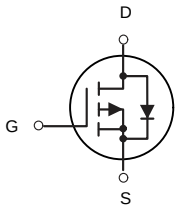


TO-252-2L

General Features

V_{DS} = -30V I_D =-100A

$R_{DS(ON)}$ <4.5mΩ @ V_{GS}=-10V



P-Channel MOSFET

Application

Lithium battery protection

Wireless impact

Mobile phone fast charging

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
IPD90P03P4L04ATMA1	TO-252-2L	HXY MOSFET	2500

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	-30	V
VGSS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current T_C = 25℃	-100	A
ID	Continuous Drain Current T_C = 100℃	-59	A
IDM	Pulsed Drain Current note1	-360	A
EAS	Single Pulsed Avalanche Energy note2	210	mJ
PD	Power Dissipation T_C = 25℃	109	W
RθJC	Thermal Resistance, Junction to Case	1.4	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	℃

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID= -250μA	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	VDS= -30V, VGS=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	VDS=0V, VGS= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID= -250μA	-1.0	-1.6	-2.5	V
RDS(on)	Static Drain-Source on-Resistance	VGS= -10V, ID= -30A	-	3.5	4.5	mΩ
		VGS= -4.5V, ID= -20A	-	4.8	6.2	
Ciss	Input Capacitance	VDS= -15V, VGS=0V, f=1.0MHz	-	6800	-	pF
Coss	Output Capacitance		-	769	-	pF
Crss	Reverse Transfer Capacitance		-	726	-	pF
Qg	Total Gate Charge	VDS= -15V, ID= -30A, VGS= -10V	-	30	-	nC
Qgs	Gate-Source Charge		-	6	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	8	-	nC
td(on)	Turn-on Delay Time	VDD= -15V, ID= -30A, VGS= -10V, RGEN=2.5Ω	-	11	-	ns
tr	Turn-on Rise Time		-	13	-	ns
td(off)	Turn-off Delay Time		-	52	-	ns
tf	Turn-off Fall Time		-	21	-	ns
IS	Maximum Continuous Drain to Source DiodeForward Current		-	-	-100	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
VSD	Drain to Source Diode Forward Voltage	VGS=0V, IS= -30 A		-0.8	-1.2	V

Notes:

1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2、E AS condition: T_J =25℃, V_{DD} = -15V, V_G = -10V, R_G =25Ω, L=0.5mH, I_{AS} = -29A

3、Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

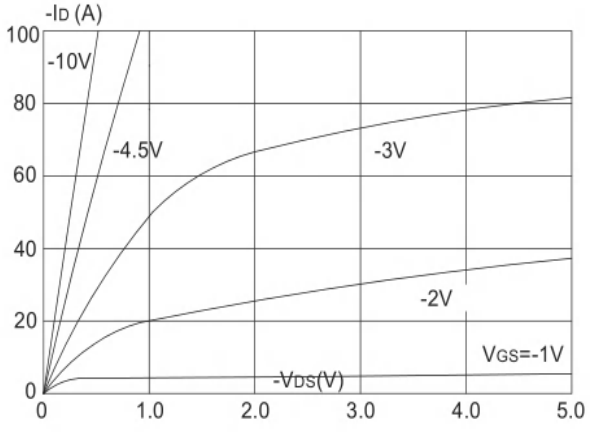


Figure1: Output Characteristics

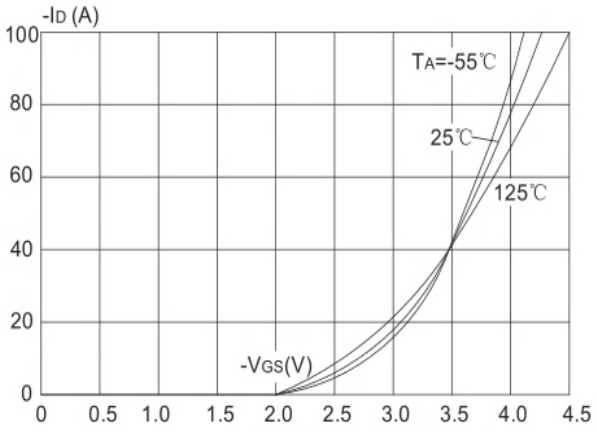


Figure 2: Typical Transfer Characteristics

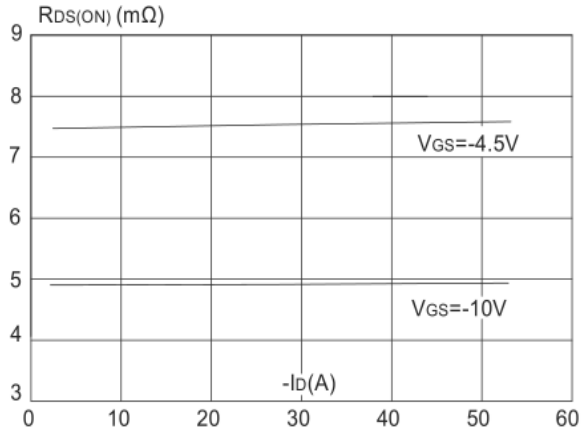


Figure 3:On-resistance vs. Drain Current

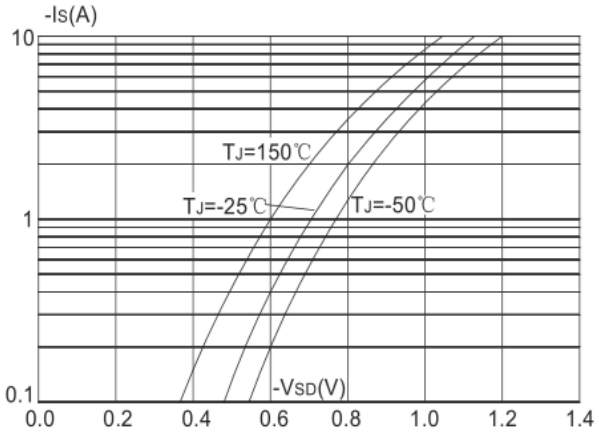


Figure 4: Body Diode Characteristics

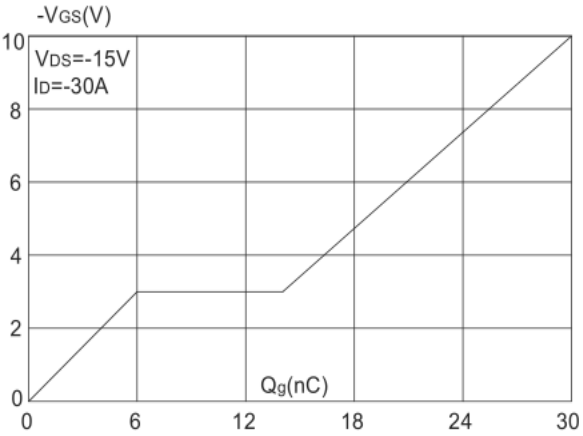


Figure 5: Gate Charge Characteristics

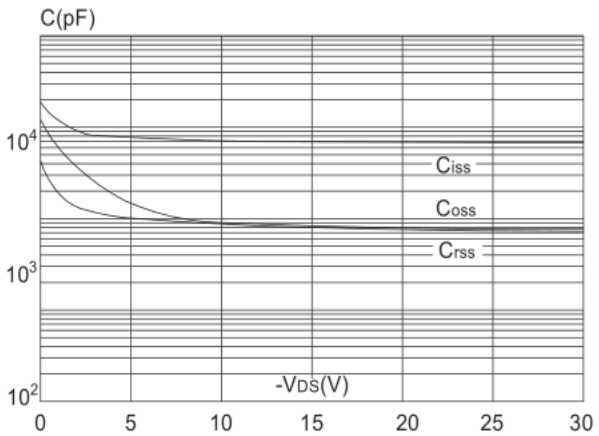


Figure 6: Capacitance Characteristics

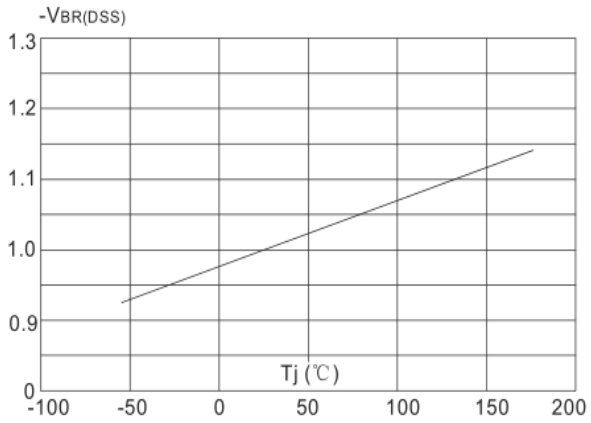


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

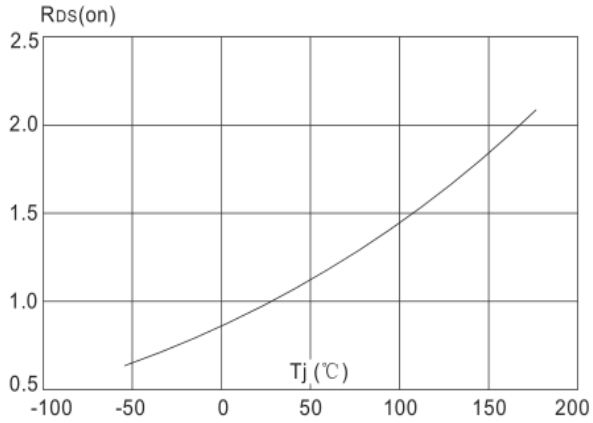


Figure 8: Normalized on Resistance vs. Junction Temperature

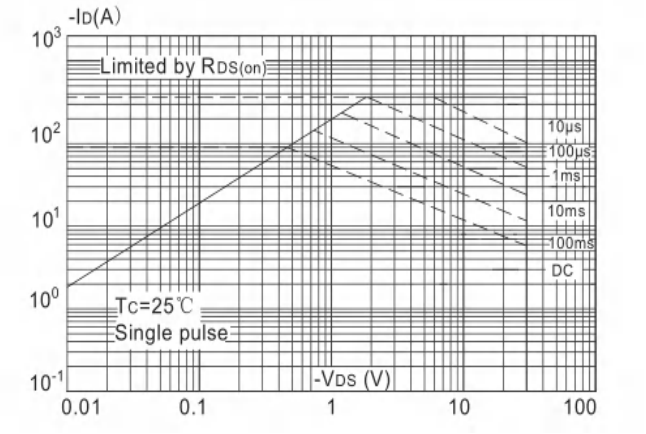


Figure 9: Maximum Safe Operating Area

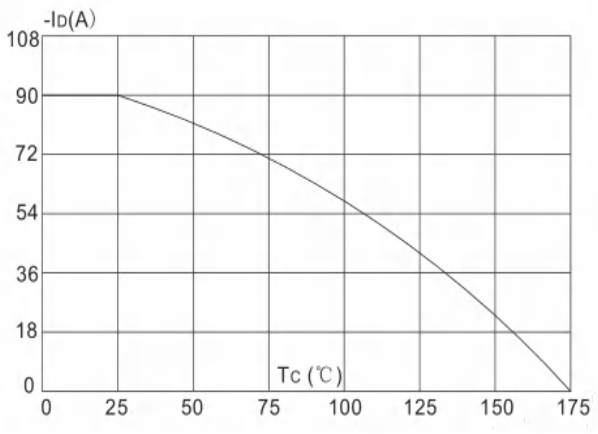


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

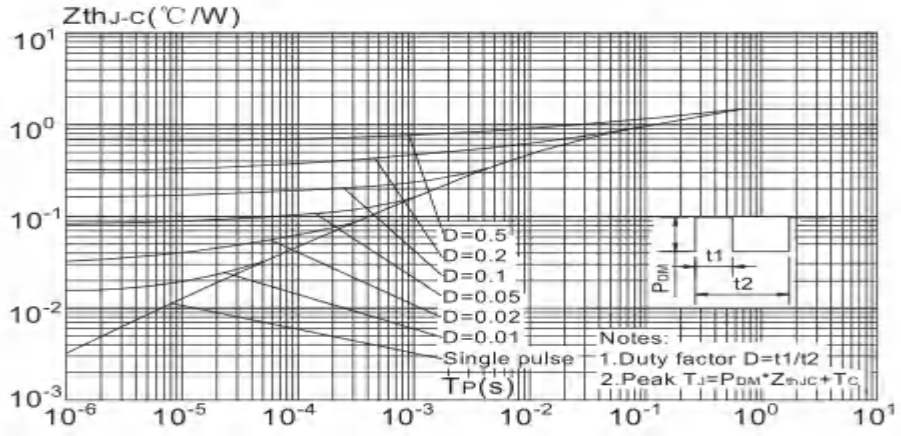
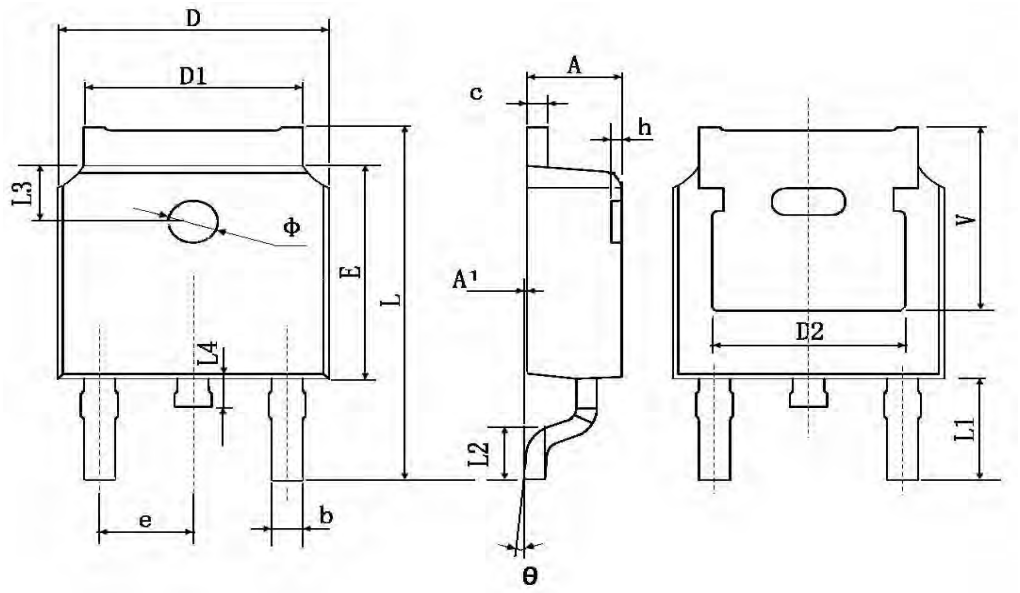


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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