TM35G06NF

N+P -Channel Enhancement Mode Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

N Channel

V_{DS} =60V, I_D =35A

$R_{DS(ON)}$=12mΩ @ V_{GS}=10V

P Channel

V_{DS} = -60V,I_D = -34A

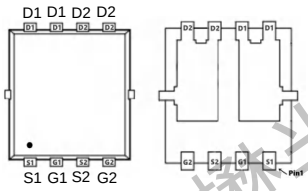
$R_{DS(ON)}$ = 29mΩ @ V_{GS}=-10V

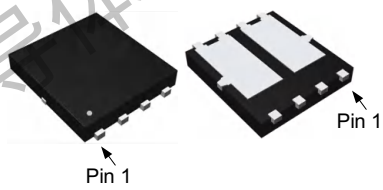
100% UIS Tested

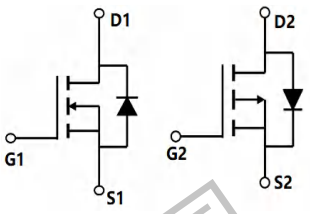
100% R_g Tested

Green Product

NF:DFN5x6-8L







Marking: 35G06

Absolute Maximum Ratings(T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Rating		Units
		N-Channel	P-Channel	
V_{DS}	Drain-Source Voltage	60	-60	V
V_{GS}	Gate-Source Voltage	±30	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS}@ 10V	35	-34	A
I_D@T_A=100°C	Continuous Drain Current, V_{GS}@ 10V	26	-25	A
I_{DM}	Pulsed Drain Current	180	-140	A
P_D	Total Power Dissipation	75	88	W
T_{STG}	Storage Temperature Range	-55 to 175	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	---	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	1.67	°C/W

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N-CH Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=60V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	2	3	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=30A	---	12	15	mΩ
		V_{GS}=4.5V,I_D=20A	---	18	23	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	1928	---	pF
C_{oss}	Output Capacitance		---	136	--	
C_{rss}	Reverse Transfer Capacitance		---	120	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D=30A, R_{ENG}=1.8Ω,V_{GS}=10V	---	10	---	ns
t_r	Rise Time		---	82	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	31	---	ns
t_f	Fall Time		---	101	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=30V, I_D=30A	---	47	---	nc
Q_{gs}	Gate-Source Charge		---	8.4	---	nc
Q_{gd}	Gate-Drain “Miller” Charge		---	11.55	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=30A	---	---	1.2	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	35	A
I_{SM}	Pulsed Drain Current		---	---	140	A
Trr	Reverse Recovery Time	I_F=30A,T_J=25℃ dI/dt=100A/us	---	14	---	ns
Qrr	Reverse Recovery Charge		---	20	---	nc

Typical Characteristics: (T_C=25℃ unless otherwise noted)

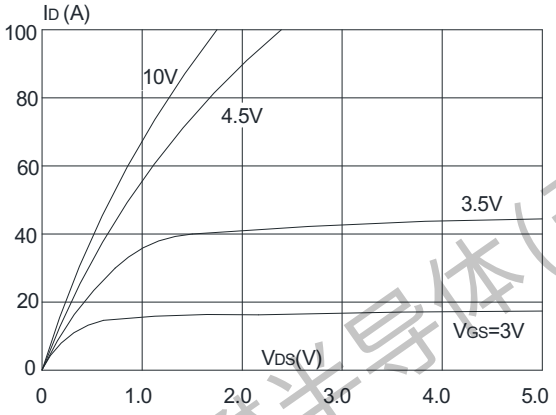

Figure1: Output Characteristics

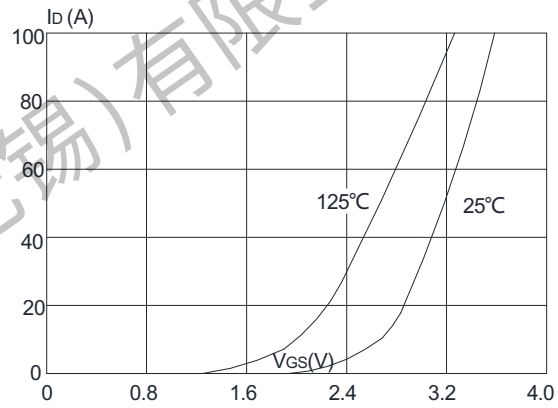

Figure 2: Typical Transfer Characteristics

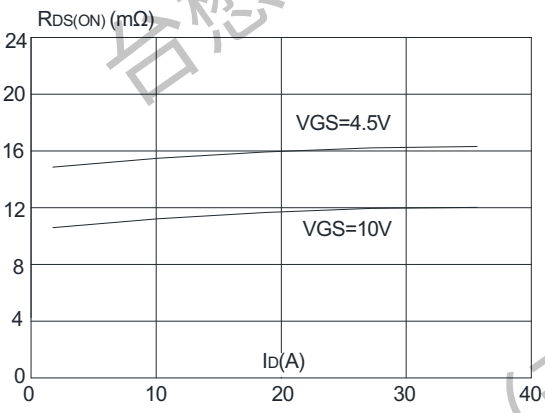

Figure 3: On-resistance vs. Drain Current

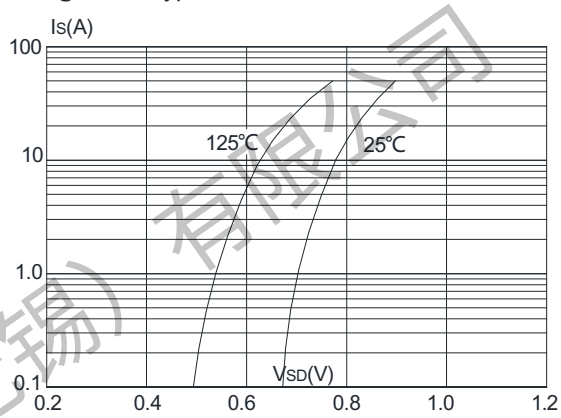

Figure 4: Body Diode Characteristics

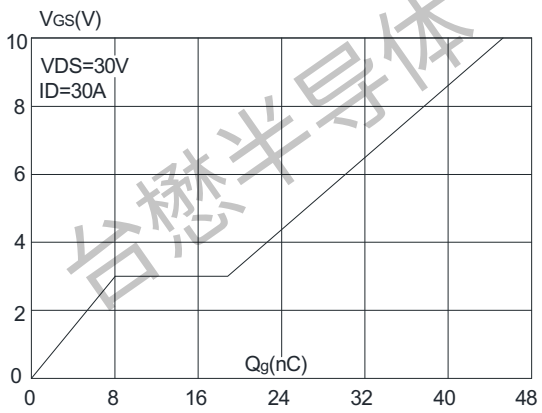

Figure 5: Gate Charge Characteristics

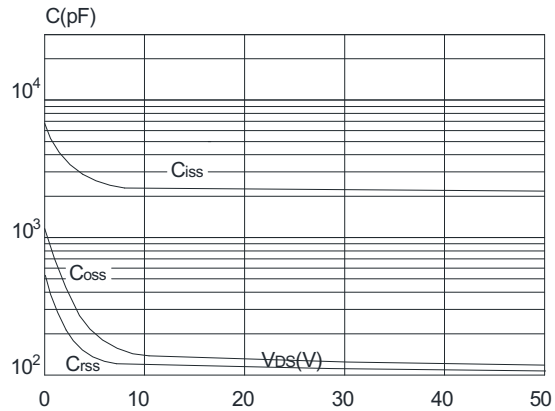

Figure 6: Capacitance Characteristics

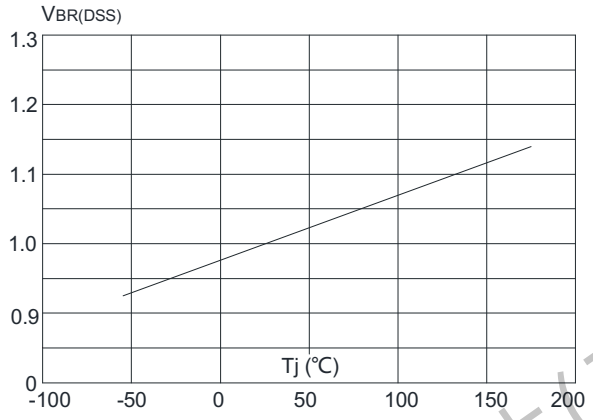

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

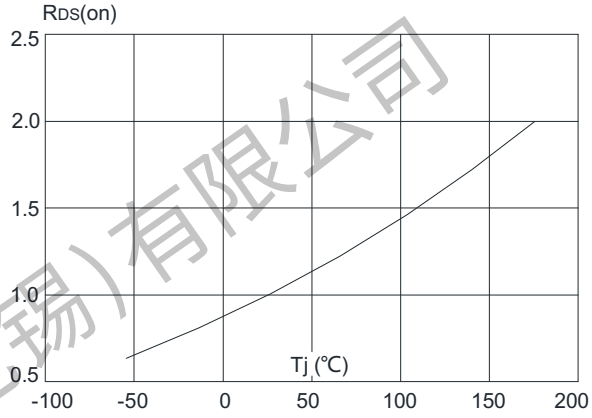

Figure 8: Normalized on Resistance vs. Junction Temperature

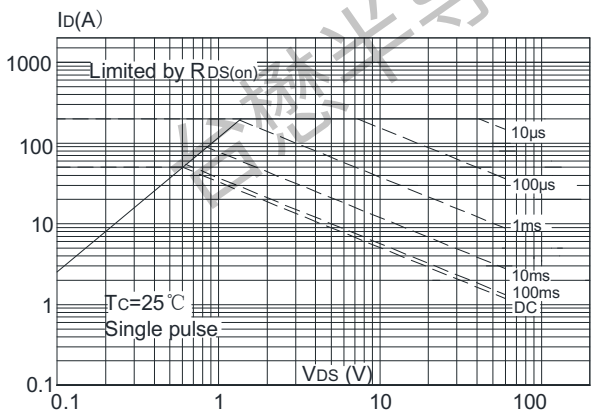

Figure 9: Maximum Safe Operating Area

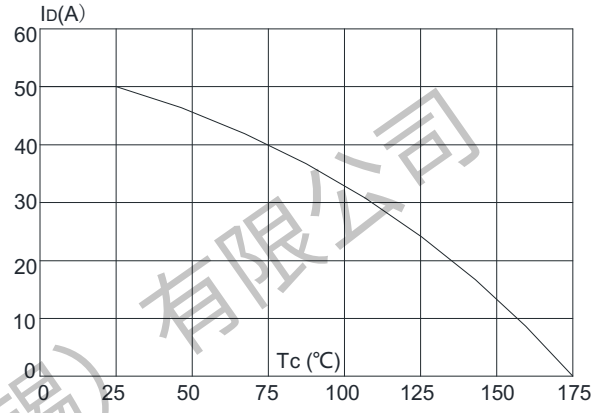

Figure 10: Maximum Continuous Drain Current vs. Case Temperature

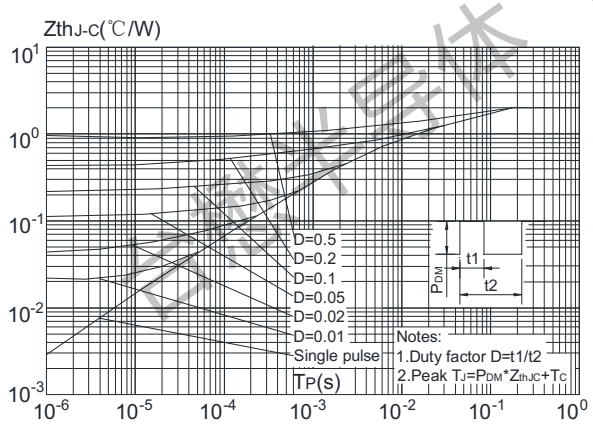

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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P-CH Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-60V	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1	-2	-3	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-15A	---	29	36	mΩ
		V_{GS}=-4.5V,I_D=-10A	---	35	45	
G_{FS}	Forward Transconductance	V_{DS} =-5V, I_D=-15A	---	35	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V, f=1MHz	---	4025	---	pF
C_{oss}	Output Capacitance		---	133	---	
C_{rss}	Reverse Transfer Capacitance		---	97	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-30V, R_{GEN}=3Ω, V_{GS}=-10V	---	12	---	ns
t_r	Rise Time		---	9	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	63	---	ns
t_f	Fall Time		---	13	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-30V, I_D=-20A	---	53	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	12	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-15A, T_J=25℃	---	-0.88	-1.2	V
I_S	Continuous Drain Current	V_D=V_G=0V	---	---	-34	A
I_{SM}	Pulsed Drain Current	V_D=V_G=0V	---	---	-125	A
trr	Reverse Recovery Time	Isd=-20A,VGS=0V .dI/dt=-500A/μs	---	26	---	ns
Qrr	Reverse Recovery Charge		---	29	---	nc

Typical Characteristics: (T_C=25℃ unless otherwise noted)

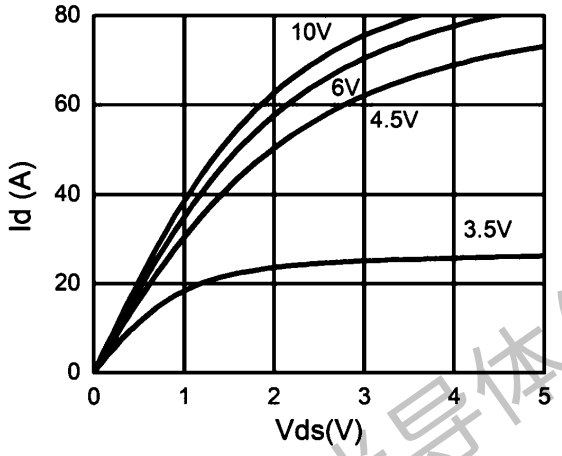


Figure 1. Output Characteristics

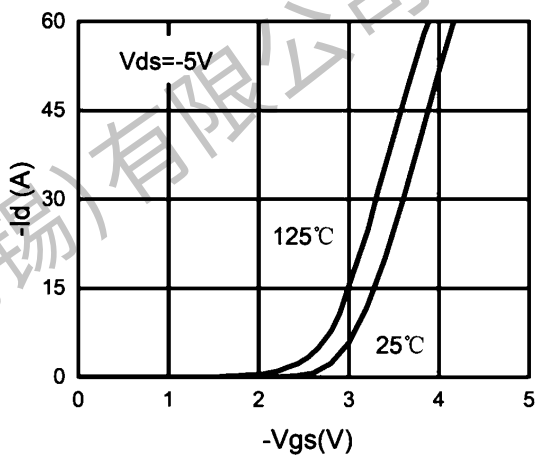


Figure 2. Transfer Characteristics

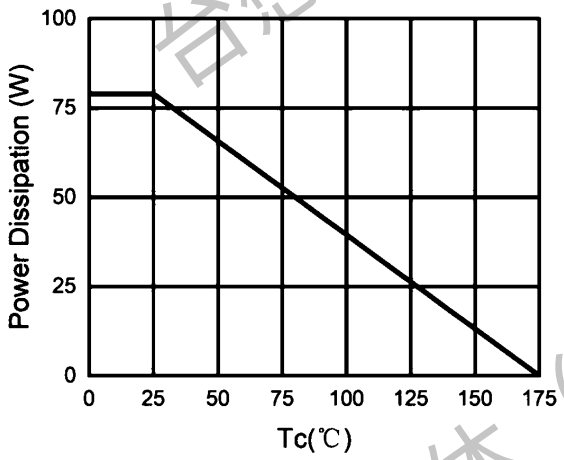


Figure 3. Power Dissipation

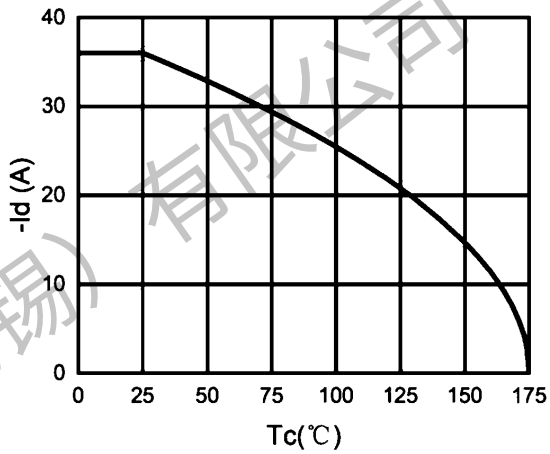


Figure 4. Drain Current

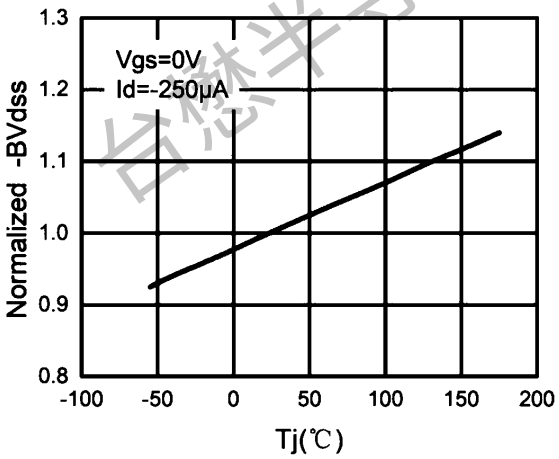


Figure 5. BV_{DSS} vs Junction Temperature

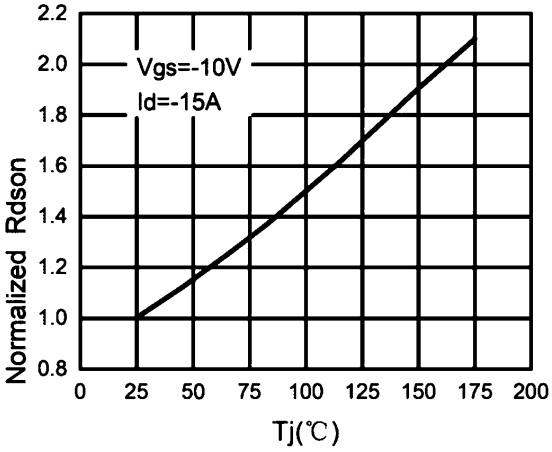


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

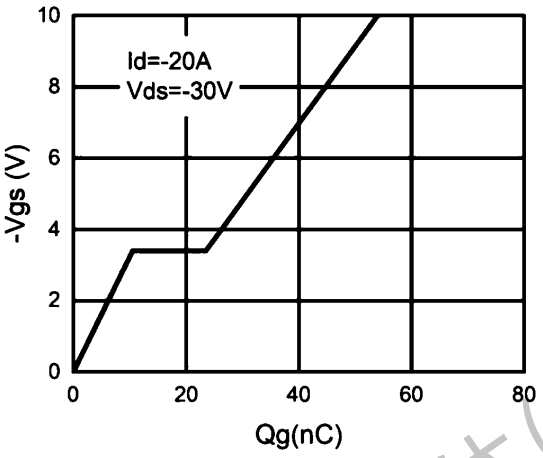


Figure 7. Gate Charge Waveforms

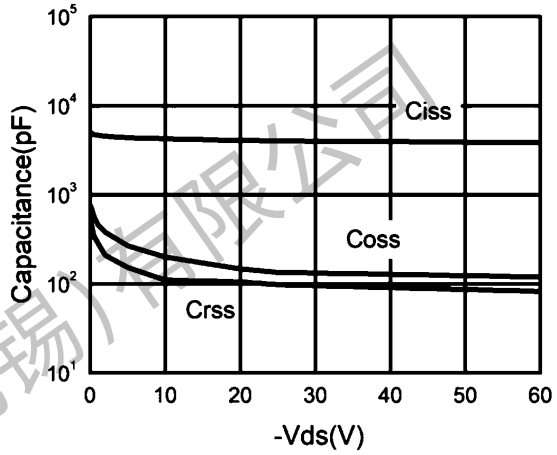


Figure 8. Capacitance

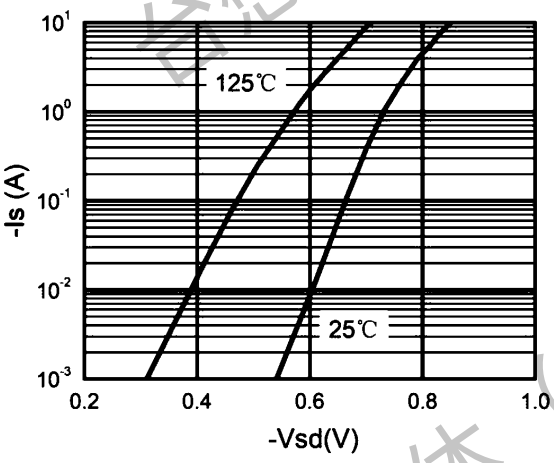


Figure 9. Body-Diode Characteristics

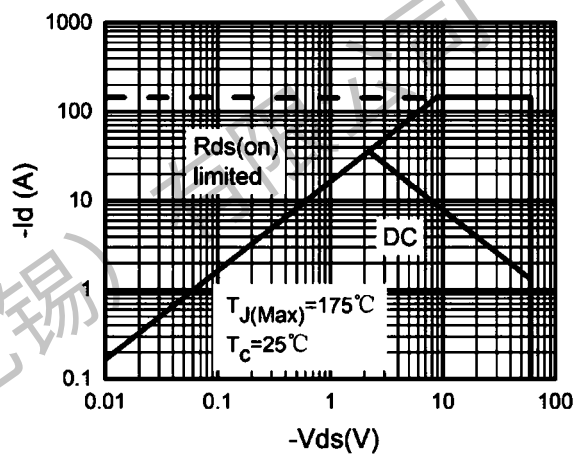
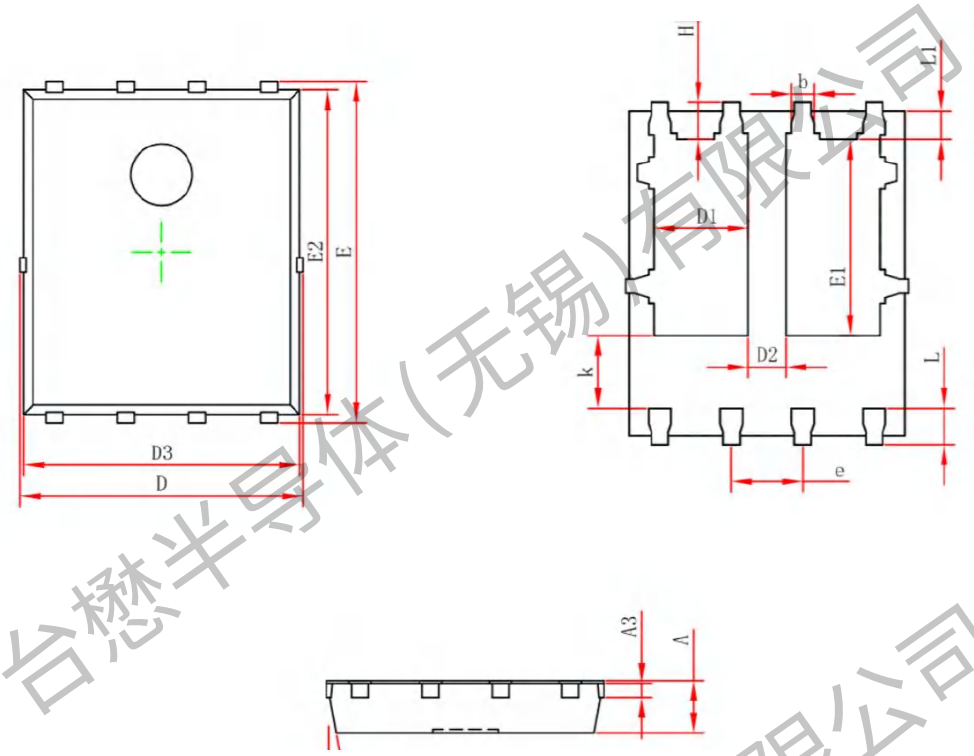


Figure 10. Maximum Safe Operating Area

Package Mechanical Data:DFN5x6-8L

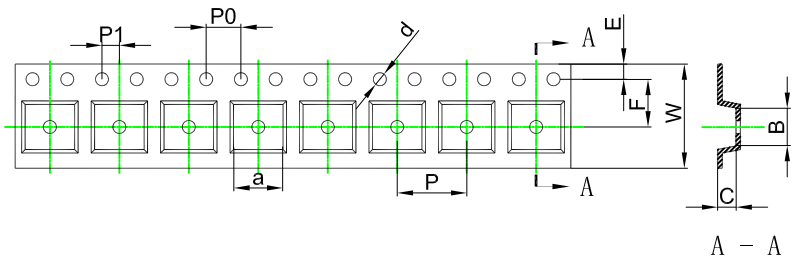


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.154REF.		0.006REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

TM35G06NF

N+P -Channel Enhancement Mode Mosfet

PDFN5×6-8L Embossed Carrier Tape



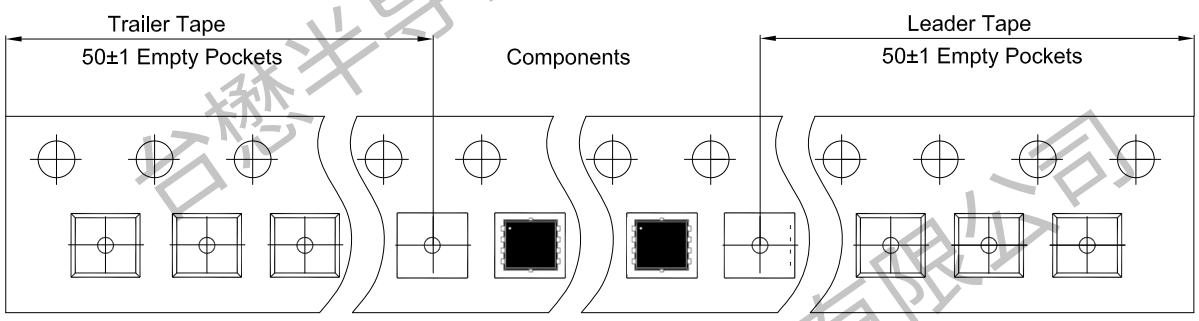
Packaging Description:

SOP-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

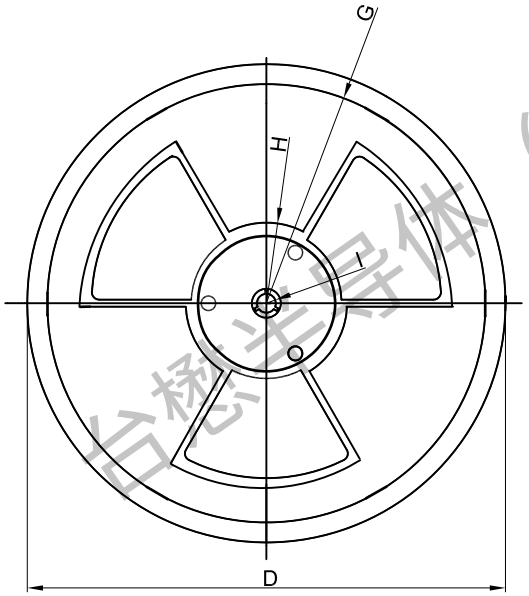
ALL DIM IN mm

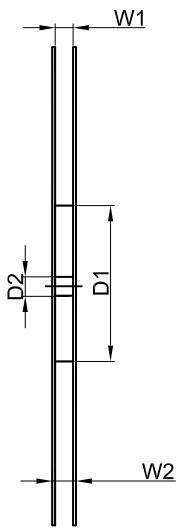
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN5×6-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN5×6-8L Tape Leader and Trailer



PDFN5×6-8L Reel





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R135.00	R55.00	R6.50	12.00	14.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
5,000 pcs	13 inch	10,000 pcs	370×355×52	50,000 pcs	400×360×368	

Important Notices and Disclaimers

- Tritech-MOS Technology Corp.reserves the right to change thisdocument, its products, and specifications at any time without prior notice.
- Before final design, purchase, or use, customers should obtain and confirm the latest product information and specifications.
- Tritech-MOS Technology Corp. makes no warranties, representations or warranties regarding the suitability of its products for any specific purpose, and Tritech-MOS Technology Corp. does not assume any responsibility for application assistance or customer product design.
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Revision history:

Date	Rev	Description	Page
2023.05.24	23.05	Original	