

-30V P-Channel MOSFET

1. Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	9.2mΩ@-10V	-12A
	10.7mΩ@-6V	

2. Features

- V_{DS} -30V
- I_D -12A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <12 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-6V$) <15 mohm
- High cell density trench P-ch MOSFETs
- Super low gate charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

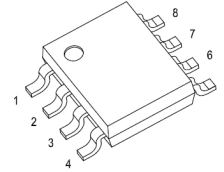
3. Applications

- Battery protection applications
- Load switch

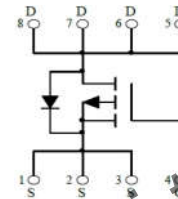
4. Absolute Maximum rating ($T_A = 25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	-30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-12	A
Pulsed Drain Current	I_{DM}	-48	A
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

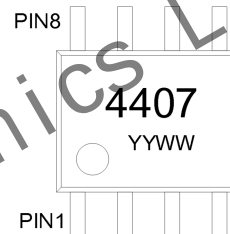
SOP-8



Schematic diagram



Marking



4407 : Device Code
YY : Year Code
WW : Week Code

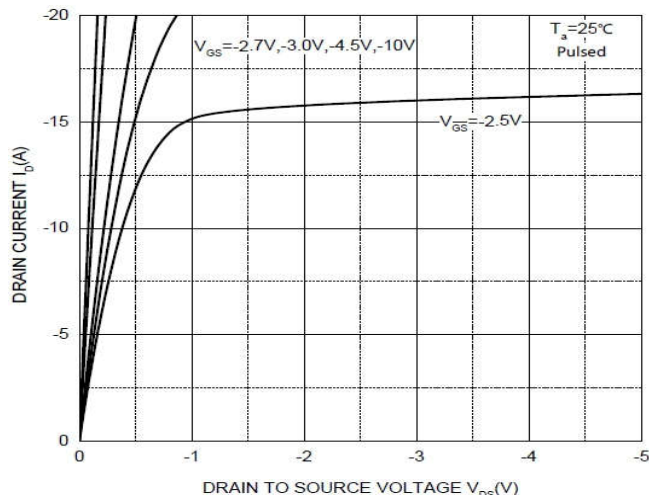
5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate Threshold Voltage ¹	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.5	-2.2	V
Drain-source On-resistance ¹	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -12A$		9.2	12	m Ω
		$V_{GS} = -6V, I_D = -10A$		10.7	15	
Forward transconductance ¹	g_{FS}	$V_{DS} = -5V, I_D = -15A$		30		S
Dynamic Characteristics ²						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1MHz$		3900		pF
Output Capacitance	C_{oss}			420		
Reverse Transfer Capacitance	C_{rss}			400		
Switching Characteristics ²						
Total Gate Charge	Q_g	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -10A$		62		nC
Gate-source Charge	Q_{gs}			16		
Gate-drain Charge	Q_{gd}			18		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V,$ $R_G = 3\Omega, R_L = 1.25\Omega$		20		ns
Turn-on Rise Time	t_r			14		
Turn-off Delay Time	$t_{d(off)}$			57		
Turn-off Fall Time	t_f			27		
Source - Drain Diode Characteristics						
Diode Forward Voltage ¹	V_{SD}	$V_{GS} = 0V, I_S = -2A$			-1.2	V

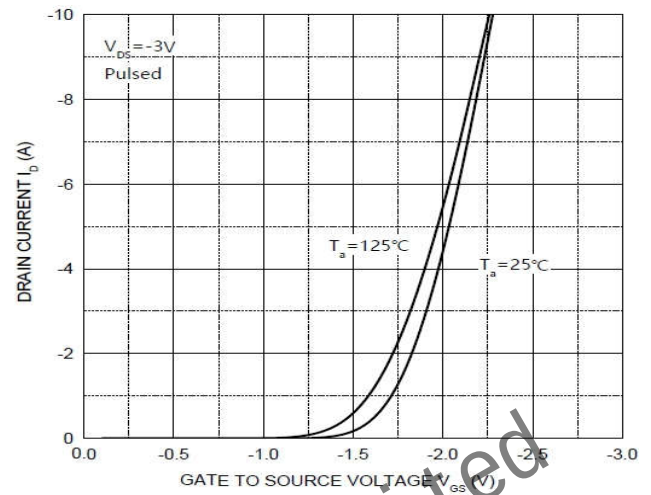
Notes :

- Pulse test, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

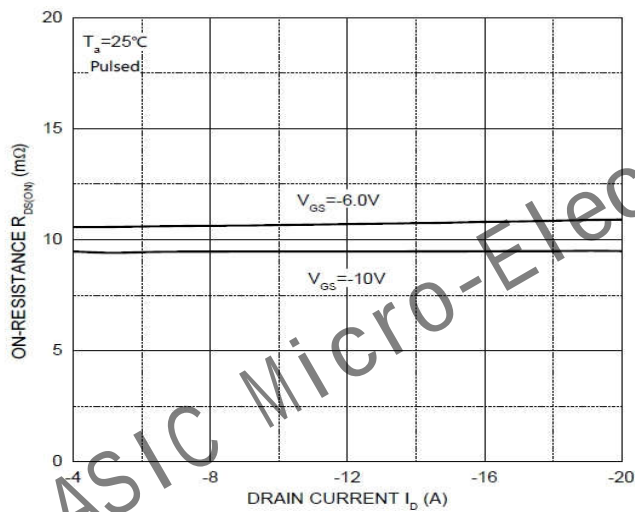
6. Typical Characteristic



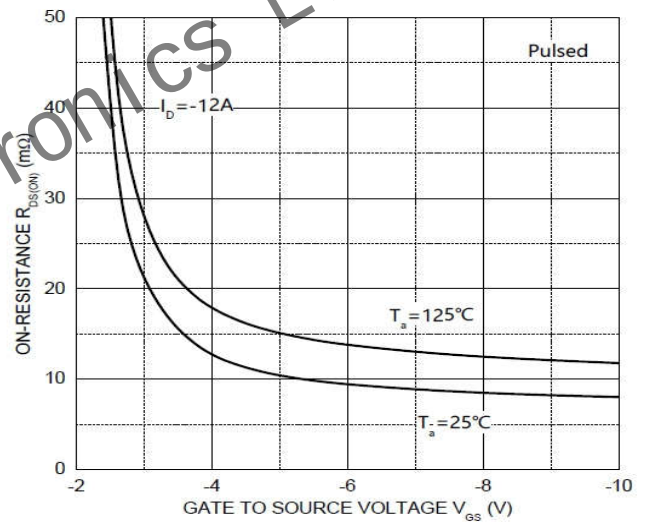
Output Characteristics



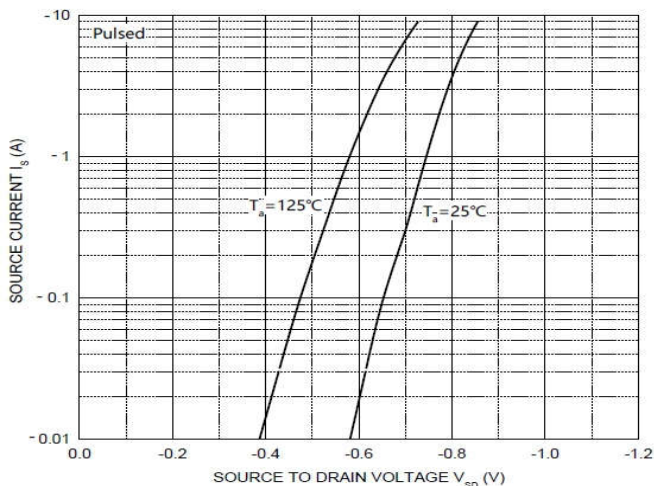
Transfer Characteristics



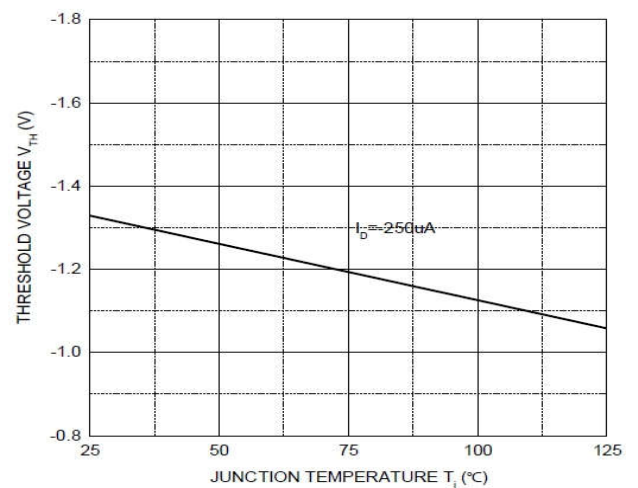
$R_{DS(on)}$ — I_D



$R_{DS(on)}$ — V_{GS}

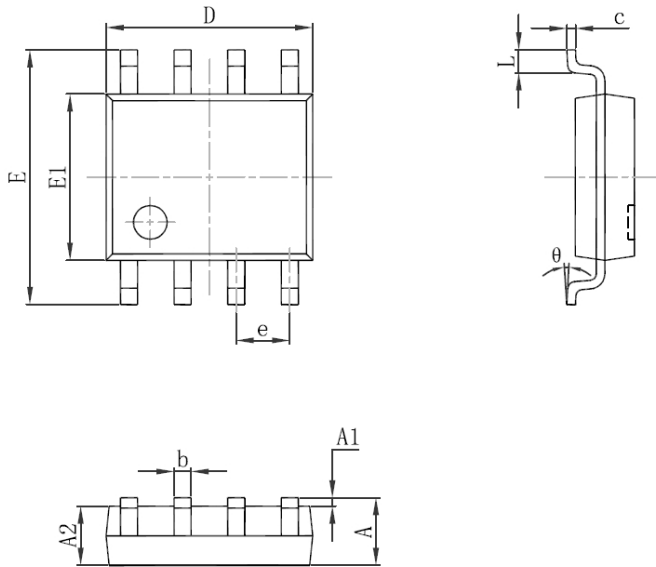


I_S — V_{SD}



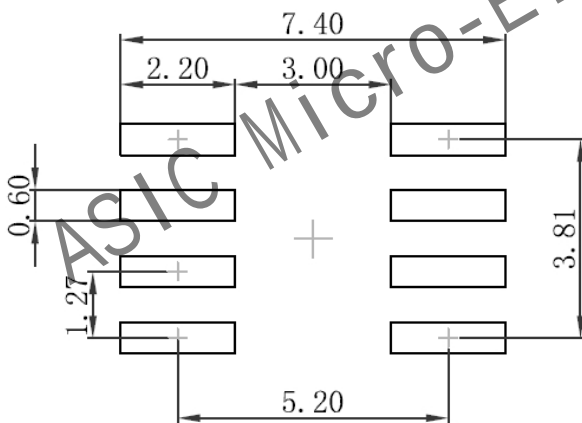
Threshold Voltage

7.Dimension



Symbol	Dimensions		Dimensions	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	S°	0°	8°

8.Recommended Land Pattern

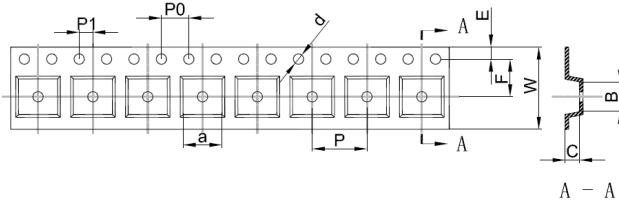


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

9.Tape and Reel

SOP-8 Embossed Carrier Tape

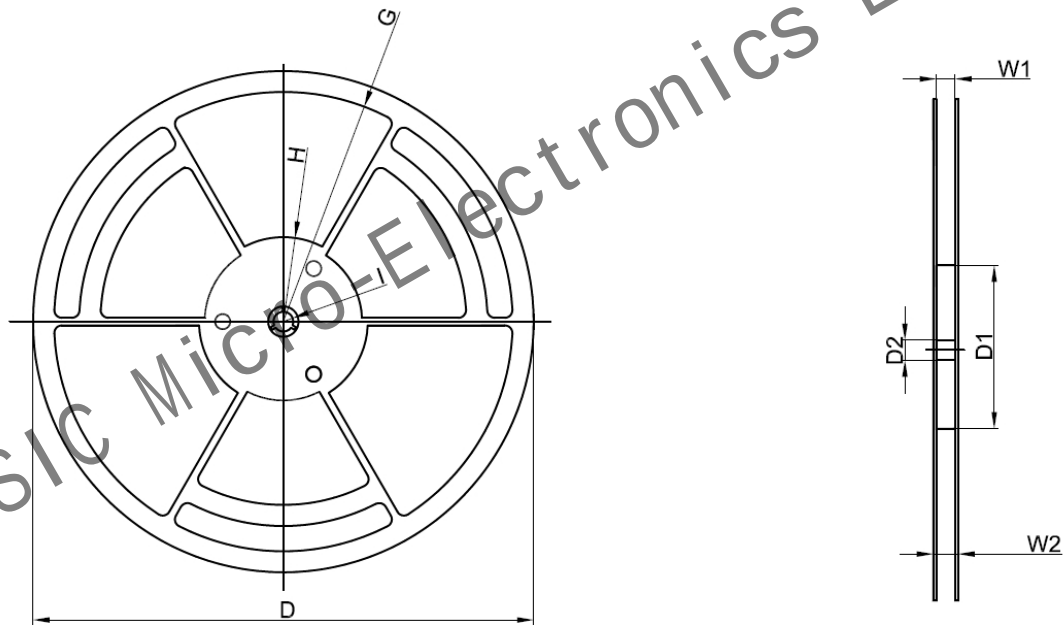


Packaging Description:

SOP8 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
SOP-8	6.40	5.40	2.10	Φ1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP-8 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13" Dia	Φ330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

Reel	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500pcs	13 inch	2,500pcs	336×336×48	20,000pcs	445×355×365	

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