AMS530C

 $I_D(A)$

5.8

4.5

-4.9

Analog Power

P & N-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low r_{DS(on)} and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low r_{DS(on)} provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN3x3-8 saves board space
- Fast switching speed
- High performance trench technology



HALOGEN FREE

211					
-30	105	$@V_{GS} = $	-4.5V	-4.0	
S1 G1	DFN3x Top V	3-8PP		G ₂ c	S ₂
S2 G2		6	o S₁ -Channel MO	SFET P-Cha	D2 annel MC

 $r_{DS(on)} m(\Omega)$

 $50 @ V_{GS} = 10V$

83 @ $V_{GS} = 4.5V$

 $72 @ V_{GS} = -10V$

PRODUCT SUMMARY

V_{DS} (V)

30

20

P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C UNLESS OTHERWISE NOTED)									
Parameter									
Drain-Source Voltage									
	V _{GS}	20	-20	V					
$T_A=25^{\circ}C$	L	5.8	-4.9						
$T_A=70^{\circ}C$	ID	4.8	-4	А					
Pulsed Drain Current ^b									
Continuous Source Current (Diode Conduction) ^a				А					
$T_A=25^{\circ}C$	D_	3.5	2.5	W					
$T_A=70^{\circ}C$	гD	2.2	1.3						
Operating Junction and Storage Temperature Range				°C					
	$T_{A}=25^{\circ}C$ $T_{A}=70^{\circ}C$ $T_{A}=25^{\circ}C$ $T_{A}=70^{\circ}C$	Symbol V_{DS} V_{GS} $T_A=25^{\circ}C$ $T_A=70^{\circ}C$ IDM ion) ^a Is T_A=70^{\circ}C	Symbol N-Channel V_{DS} 30 V_{GS} 20 $T_A=25^{\circ}C$ I_D $T_A=70^{\circ}C$ I_D I_{DM} ± 20 ion)^a I_S $T_A=25^{\circ}C$ P_D $T_A=70^{\circ}C$ $A.8$	Symbol N-Channel P-Channel V_{DS} 30 -30 V_{GS} 20 -20 $T_A=25^{\circ}C$ I_D 5.8 -4.9 $T_A=70^{\circ}C$ I_D 4.8 -4 I_{DM} ± 20 ± 20 ion)^a I_S 2.9 -2.9 $T_A=25^{\circ}C$ P_D 3.5 2.5 $T_A=70^{\circ}C$ P_D 3.5 2.1					

THERMAL RESISTANCE RATINGS								
Parameter	Symbol	Maximum	Units					
	t <= 10 sec	D	35	°C/W				
Maximum Junction-to-Ambient ^a	Steady State	R _{0JA}	85	°C/W				

Notes

Surface Mounted on 1" x 1" FR4 Board. a.

Pulse width limited by maximum junction temperature b.

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SPECIFICATIONS ($T_A = 25^{\circ}C$ UNLESS OTHERWISE NOTED)									
Parameter	Symbol	Test Conditions	Limits Ch Min Typ Max			Max	Unit		
Static						•			
Gate-Threshold Voltage	V _{GS(th)}	$V_{GS} = V_{DS}$, $I_D = 250$ uA	N	1			v		
č	GG(ui)	$V_{GS} = V_{DS}, I_{D} = -250 \text{ uA}$	Р	-1		100			
Gate-Body Leakage	I _{GSS}	$\frac{V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}}{V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}}$	N P			± 100 ± 100	nA		
Zero Gate Voltage Drain Current	Т	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$	P			-1	uA		
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = 24 V, V_{GS} = 0 V$	Ν			1			
On-State Drain Current ^A	I _{D(on)}	$V_{DS} = 5 V, V_{GS} = 10 V$	Ν	20			А		
On-State Drain Current	*D(on)	$V_{DS} = -5 V, V_{GS} = -10 V$	Р	-20			A		
		$V_{GS} = 10 V$, $I_{D} = 1 A$	N			50	mΩ		
Drain-Source On-Resistance ^A	r _{DS(on)}	$V_{GS} = 4.5 \text{ V}, \text{ ID} = 1 \text{ A}$		\rightarrow		83 72			
		$V_{GS} = -10$ V, $I_D = -1$ A $V_{GS} = -4.5$ V, $I_D = -1$ A	Р			105			
Forward Tranconductance ^A	g _{fs}	$\frac{V_{GS} = -4.5 \text{ V, } \text{ID} = -1 \text{ A}}{V_{DS} = 15 \text{ V, } \text{I}_{D} = 1 \text{ A}}$ $\frac{V_{DS} = -15 \text{ V, } \text{I}_{D} = -1 \text{ A}}{V_{DS} = -15 \text{ V, } \text{I}_{D} = -1 \text{ A}}$	N P		40		S		
Dynamic		$\mathbf{v}_{\rm DS} = -13$ $\mathbf{v}, \mathbf{I}_{\rm D} = -1$ A	г		51				
•			N		4				
Total Gate Charge	Qg	N-Channel	P		8				
Cata Saymaa Changa	0	$V_{DS}=15V, V_{GS}=4.5V, I_{D}=1A$	Ν		1		nC		
Gate-Source Charge	Qgs	P-Channel	Р		2				
Gate-Drain Charge	Q_{gd}	VDS=-15V, VGS=-4.5V, ID=-1A	N		1				
	X 5"		P		3				
Turn-On Delay Time	td(on)	N-Chaneel	N P		4 5				
		$V_{DD}=15V, V_{GS}=5V, I_D=1A$,	N N		6				
Rise Time	tr	$R_{GEN}=25\Omega,$	P		7				
Turn-Off Delay Time	t1(-0	P-Channel			10		nS		
	td(off)	VDD=-15V, VGS=-5V, ID=-1A	Р		30				
Fall-Time	tf	$R_{GEN}=15\Omega$	N P		5 10				
-			Р		10				

Notes

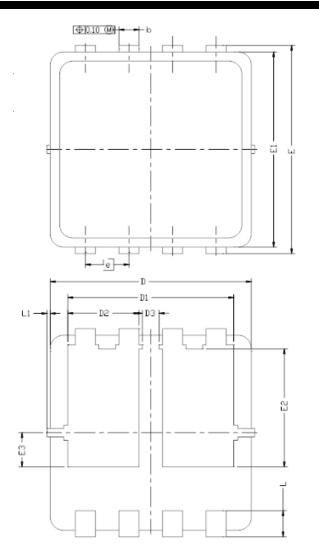
a. Pulse test: $PW \le 300$ us duty cycle $\le 2\%$.

b. Guaranteed by design, not subject to production testing.

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AMS530C



DIM.	MIL	MILLIMETERS INCH		INCHES				
D1M.	MIN	NDM	MAX	MIN	NDM	MAX		
A	0.70	0,80	0.90	0.0276	0.0315	0.0354		
A1	0.00		0.05	0.000		0.002		
b	0.24	0.30	0.35	0.009	0.012	0.014		
C	0.10	0.152	0.25	0.004	0.006	0.010		
D	9	3.00 BS	С	0	.118 BS	C		
D1	2.	475 BS	SC	0.093 BSC				
DS	1.	063 BS	SC	0.042 BSC				
D3	0,	225 BS	SC	0.009 BSC				
E	3	8.20 BS	С	0.126 BSC				
E1	3	3.00 BS	С	0.118 BSC				
E5	1.	813 BS	C	0.069 BSC				
E3	0.	525 BS	SC	0.023 BSC				
e	0	.65 BS	С	0.026 BSC				
L	0.30	0.40	0.50	0.0118	0.0157	0.0197		
L1	0		0.100	0		0.004		
-	0? 10?		12?	0?	10?	12?		

01 n

C

Α

MIN	NDM	MAX	MIN	NDM	MAX	
0.70	0,80	0,90	0.0276	0.0315	0.0354	
0.00		0.05	0.000		0.002	
0.24	0.30	0,35	0.009	0.012	0.014	
0.10	0.152	0.25	0.004	0.006	0.010	
3	3.00 BS	C	0.118 BSC			
2,	475 BS	SC	0.093 BSC			
1.	063 BS	0.042 BSC				
0,	225 BS	SC	0.009 BSC			
3	8.20 BS	С	0.126 BSC			
3	3.00 BS	C	0.118 BSC			
1.	813 BS	С	0.069 BSC			
0.	525 BS	0.023 BSC				
0	.65 BS	С	0.026 BSC			
0.30	0.40	0.50	0.0118	0.0157	0.0197	
0		0.100	0		0.004	
0?	10?	12?	0?	10?	12?	
	0.70 0.00 0.24 0.10 3 2. 1. 0. 3 3 5 1. 0. 0 0 0 0 0 0	0.70 0.80 0.00 0.24 0.30 0.10 0.152 3.00 BS 2.475 BS 1.063 BS 0.225 BS 3.20 BS 3.20 BS 3.20 BS 1.813 BS 0.525 BS 0.65 BS 0.30 0.40 0	0.70 0.80 0.90 0.00 0.05 0.24 0.30 0.35 0.10 0.152 0.25 3.00 BSC 2.475 BSC 1.063 BSC 0.225 BSC 3.20 BSC 3.20 BSC 3.20 BSC 1.813 BSC 0.525 BSC 0.65 BSC 0.30 0.40 0.50 0 0.100	0.70 0.80 0.90 0.0276 0.00 0.05 0.000 0.24 0.30 0.35 0.009 0.10 0.152 0.25 0.004 3.00 BSC 0 0 2.475 BSC 0 0 1.063 BSC 0 0 3.20 BSC 0 0 3.20 BSC 0 0 3.00 BSC 0 0 3.00 BSC 0 0 3.00 BSC 0 0 3.00 BSC 0 0 0.525 BSC 0 0 0.525 BSC 0 0 0.30 0.40 0.50 0.0118 0 0.100 0	0.70 0.80 0.90 0.0276 0.0315 0.00 0.05 0.000 0.24 0.30 0.35 0.009 0.012 0.10 0.152 0.25 0.004 0.006 3.00 BSC 0.118 BS 2.475 BSC 0.093 BS 1.063 BSC 0.0126 BS 0.225 BSC 0.009 BS 3.20 BSC 0.126 BS 3.20 BSC 0.126 BS 3.00 BSC 0.126 BS 3.00 BSC 0.126 BS 3.00 BSC 0.126 BS 3.00 BSC 0.118 BS 1.813 BSC 0.069 BS 0.30 0.40 0.50 0.0118 0.0157 0 0.100 0	