Bruckewell Technology Corp., Ltd.

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

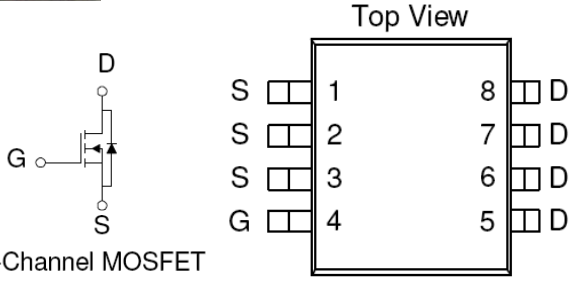
MSC37N03

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low RDS(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, and PCMCIA cards, cellular and cordless telephones.

Key Features:

- Low rDS(on) provides higher efficiency and extends battery life
- Low thermal impedance copper lead frame SOIC-8 saves board space
- Fast switching speed
- High performance trench technology

SOIC-8 schematic diagram



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	20	
Continuous Drain Current[a]	T_A=25°C	I_D	37	A
	T_A=70°C		30	
Pulsed Drain Current[b]		I_{DM}	50	
Continuous Source Current (Diode Conduction)[a]		I_S	2.3	A
Power Dissipation[a]	T_A=25°C	P_D	5	W
	T_A=70°C		2.2	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient[a]	t <= 10 sec	$R_{\theta JA}$	25	°C/W
	Steady State		65	°C/W

Notes

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

b. Pulse width limited by maximum junction temperature

SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = 20 V			100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24 V, V_{GS} = 0 V			1	uA
		V_{DS} = 24 V, V_{GS} = 0 V, T_J = 55°C			5	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	40			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 10 A			2.5	mΩ
		V_{GS} = 4.5 V, I_D = 8 A			4	
Forward Tranconductance[A]	g_{fs}	V_{DS} = 15 V, I_D = 10 A		40		S
Diode Forward Voltage	V_{SD}	I_S = 2.3 A, V_{GS} = 0 V		0.7		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 10 A		50		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			20		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15 V, R_L = 6 Ω , ID = 1 A, VGEN = 10 V		40		nS
Rise Time	t_r			60		
Turn-Off Delay Time	$t_{d(off)}$			150		
Fall-Time	t_f			90		

Notes

a. Pulse test: PW <= 300us duty cycle <= 2%.

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

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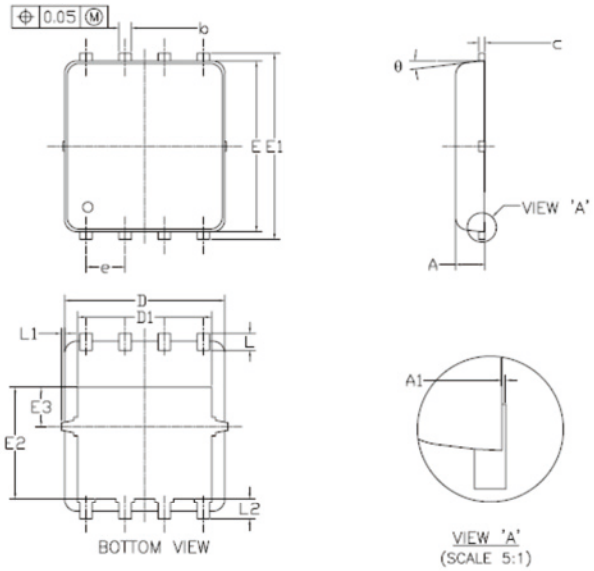
- **Package Information**



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00	—	0.05	0.000	—	0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D		5.20 BSC			0.205 BSC	
D1		4.35 BSC			0.171 BSC	
E		5.55 BSC			0.219 BSC	
E1		6.05 BSC			0.238 BSC	
E2		3.625 BSC			0.143 BSC	
E3		1.275 BSC			0.050 BSC	
e		1.27 BSC			0.050 BSC	
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	—	0.15	0	—	0.006
L2		0.68 REF			0.027 REF	
θ	0°	—	10°	0°	—	10°