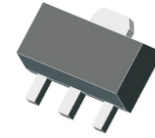


CMS0103M-HF

N-Channel
RoHS Device
Halogen Free



Features

- $V_{DS}=100V$, $I_D=3A$.
 $R_{DS(ON)} < 160m\Omega$ @ $V_{GS}=10V$ (Typ:136m Ω)
 $R_{DS(ON)} < 170m\Omega$ @ $V_{GS}=4.5V$ (Typ:140m Ω)
- High density cell design for ultra low R_{dson} .
- Fully characterized avalanche voltage and current.
- Excellent package for good heat dissipation.

Mechanical data

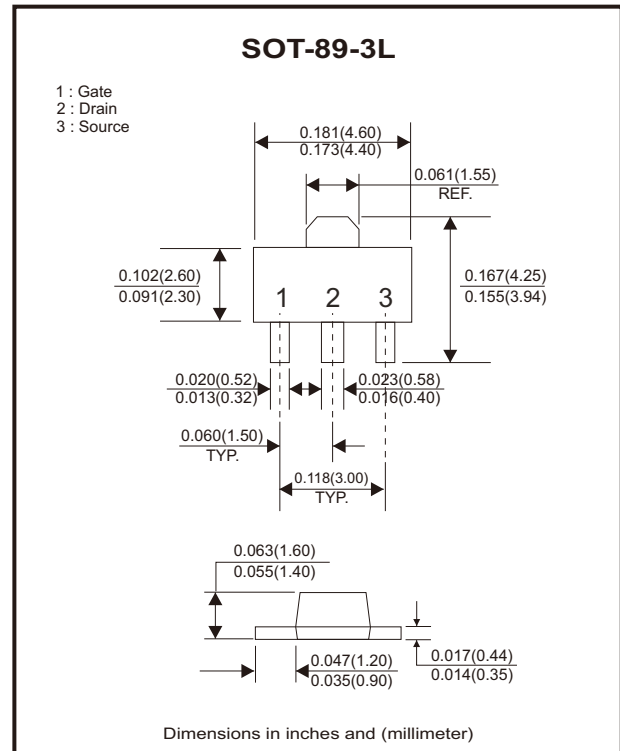
- Case: SOT-89-3L, molded plastic.
- Mounting position: Any.

Description

The CMS3404 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch and PWM applications.

Circuit Diagram

G : Gate
 S : Source
 D : Drain



Application

- Power switching application.
- Hard switched and high frequency circuits.
- Uninterruptible power supply.

Maximum Ratings ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Drain current-continuous	I_D	3	A
Drain current-pulsed (Note 1)	I_{DM}	20	A
Maximum power dissipation	P_D	1.5	W
Operating junction and storage temperature range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

Thermal Characteristic

Thermal resistance, junction to ambient (Note 2)	$R_{\theta JA}$	83	$^{\circ}C/W$
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Electrical Characteristics (Ta=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics (Note 3)						
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.8	1.1	2.0	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 3A		136	160	mΩ
		V _{GS} = 4.5V, I _D = 3A		140	170	
Forward transconductance	g _{FS}	V _{DS} = 5V, I _D = 3A		5		S
Dynamic Characteristics (Note 4)						
Input capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		650		pF
Output capacitance	C _{oss}			24		
Reverse transfer capacitance	C _{rss}			20		
Switching Characteristics (Note 4)						
Turn-on delay time	t _{d(on)}	V _{DD} = 50V, R _L = 19Ω, V _{GS} = 10V, R _G = 3Ω		6		nS
Turn-on rise time	t _r			4		
Turn-off delay time	t _{d(off)}			20		
Turn-off fall time	t _f			4		
Total gate charge	Q _g	V _{DS} = 50V, I _D = 3A, V _{GS} = 10V		20		nC
Gate-source charge	Q _{gs}			2.1		
Gate-drain charge	Q _{gd}			3.3		
Drain-Source Diode Characteristics						
Diode forward voltage (Note 3)	V _{SD}	V _{GS} = 0V, I _S = 3A			1.2	V
Diode forward current (Note 2)	I _S				3	A

Notes: 1. Repetitive rating: Pulse width limited by maximum junction temperature.

2. Surface mounted on FR4 board, $t \leq 10$ sec.

3. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

4. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics (Curves)

Fig.1 - Output Characteristics

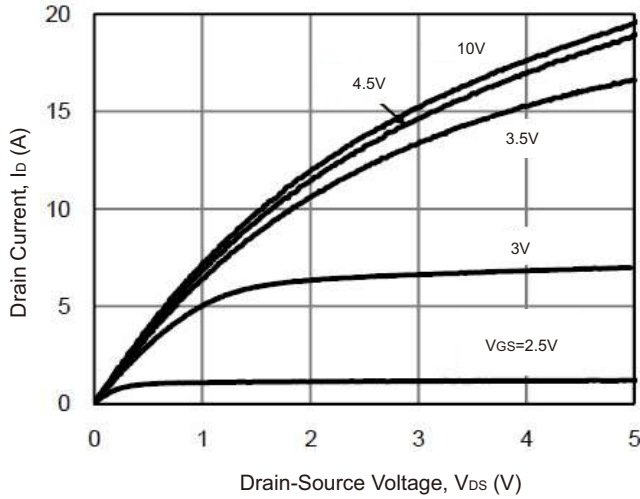


Fig.4 - $R_{DS(on)}$ -Junction Temperature

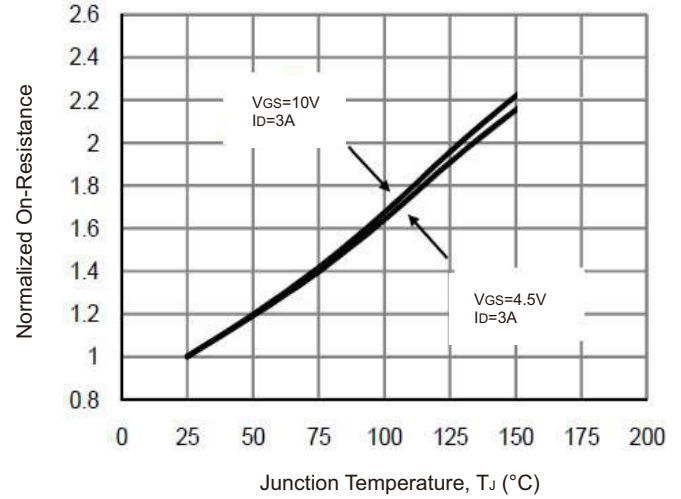


Fig.2 - Transfer Characteristics

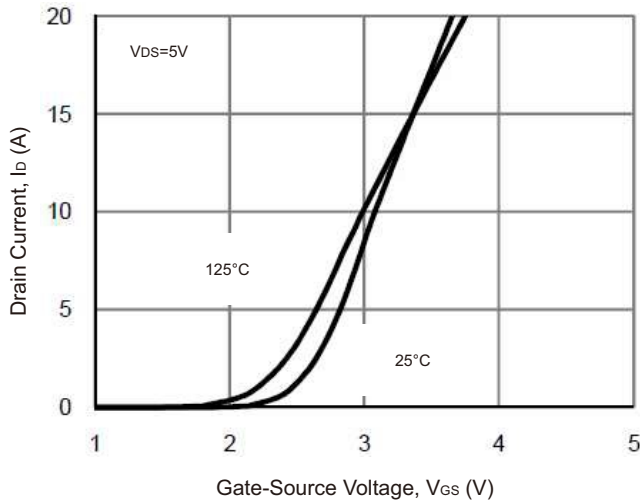


Fig.5 - Gate Charge

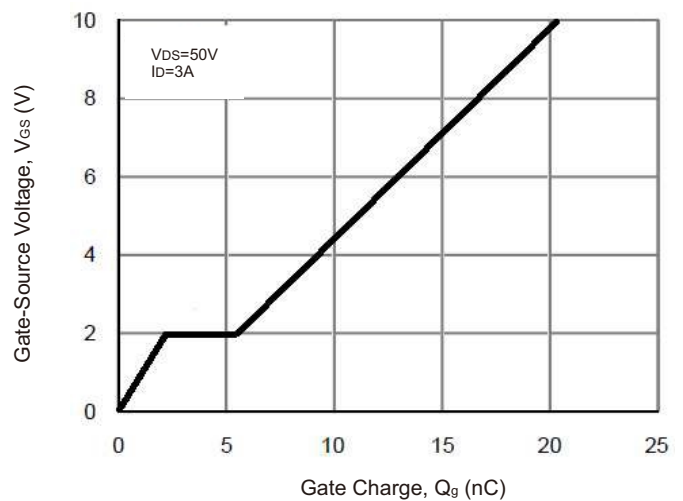


Fig.3 - $R_{DS(on)}$ -Drain Current

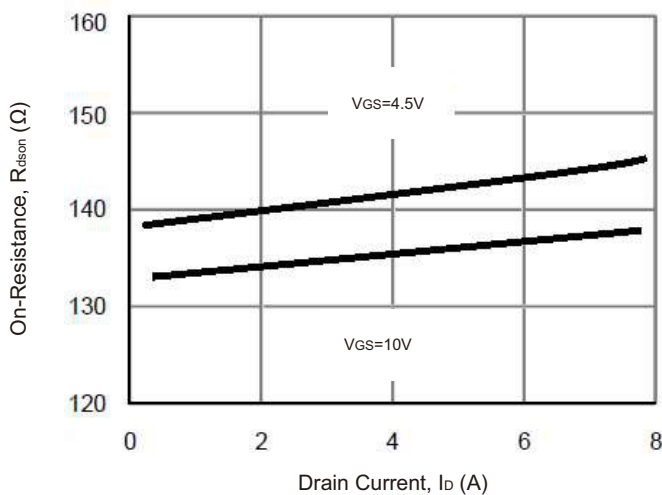
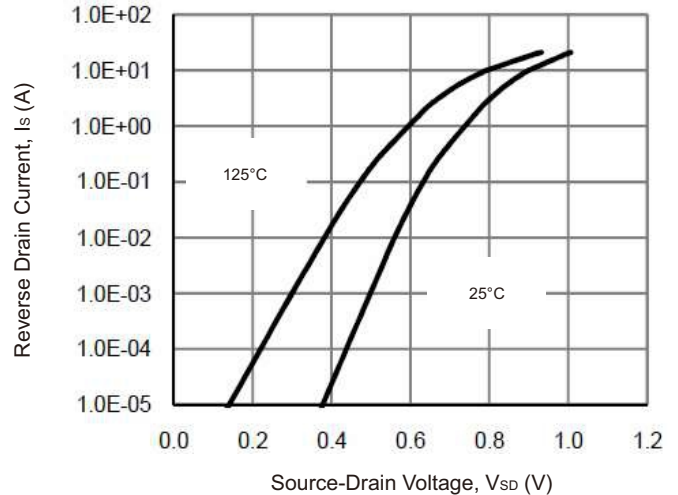


Fig.6 - Source-Drain Diode Forward



Typical Electrical and Thermal Characteristics (Curves)

Fig.7 - Capacitance vs V_{DS}

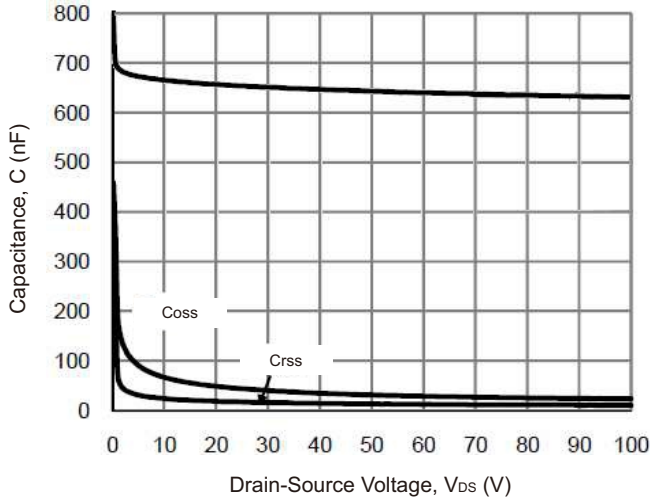


Fig.9 - BV_{DSS} vs Junction Temperature

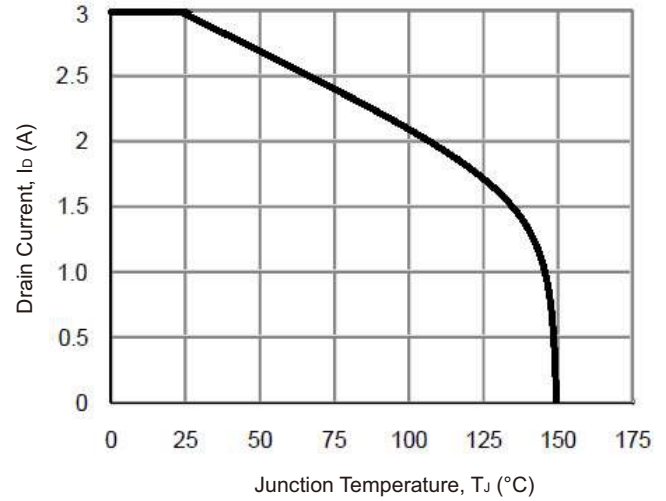


Fig.8 - Safe Operation Area

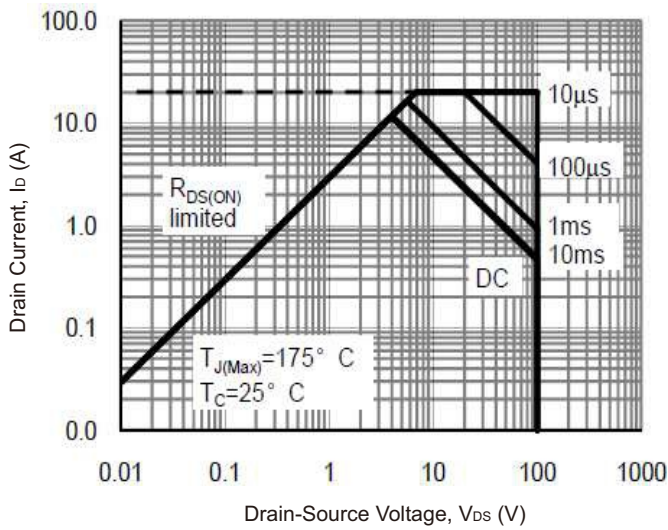


Fig.10 - Power Derating

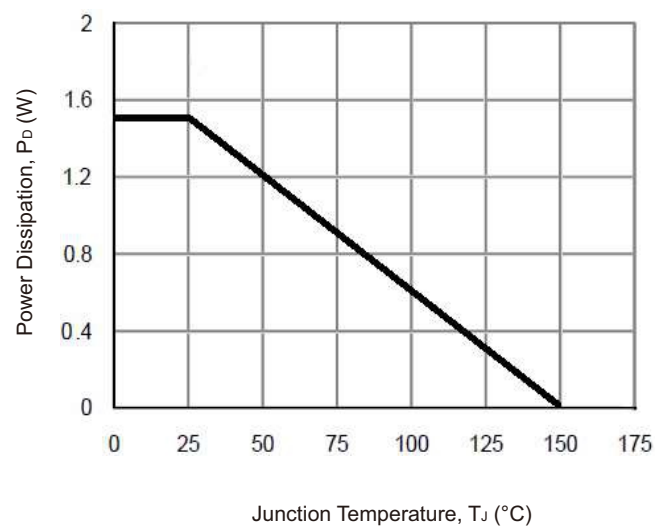
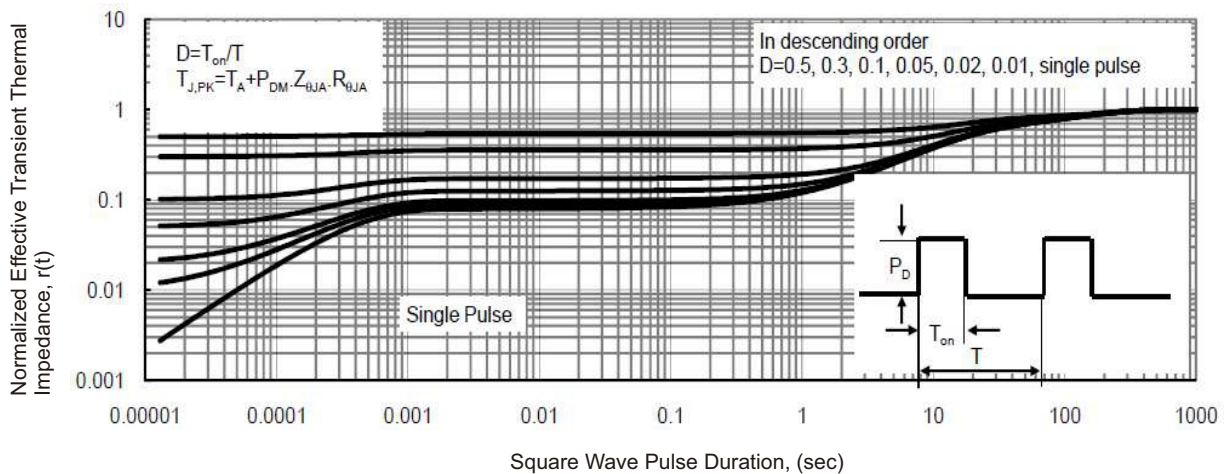
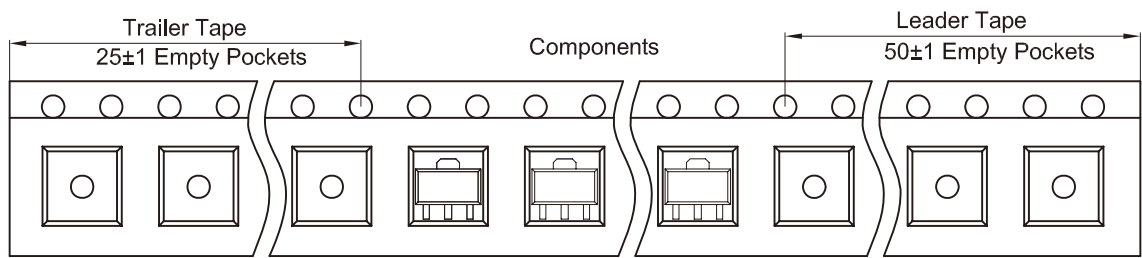
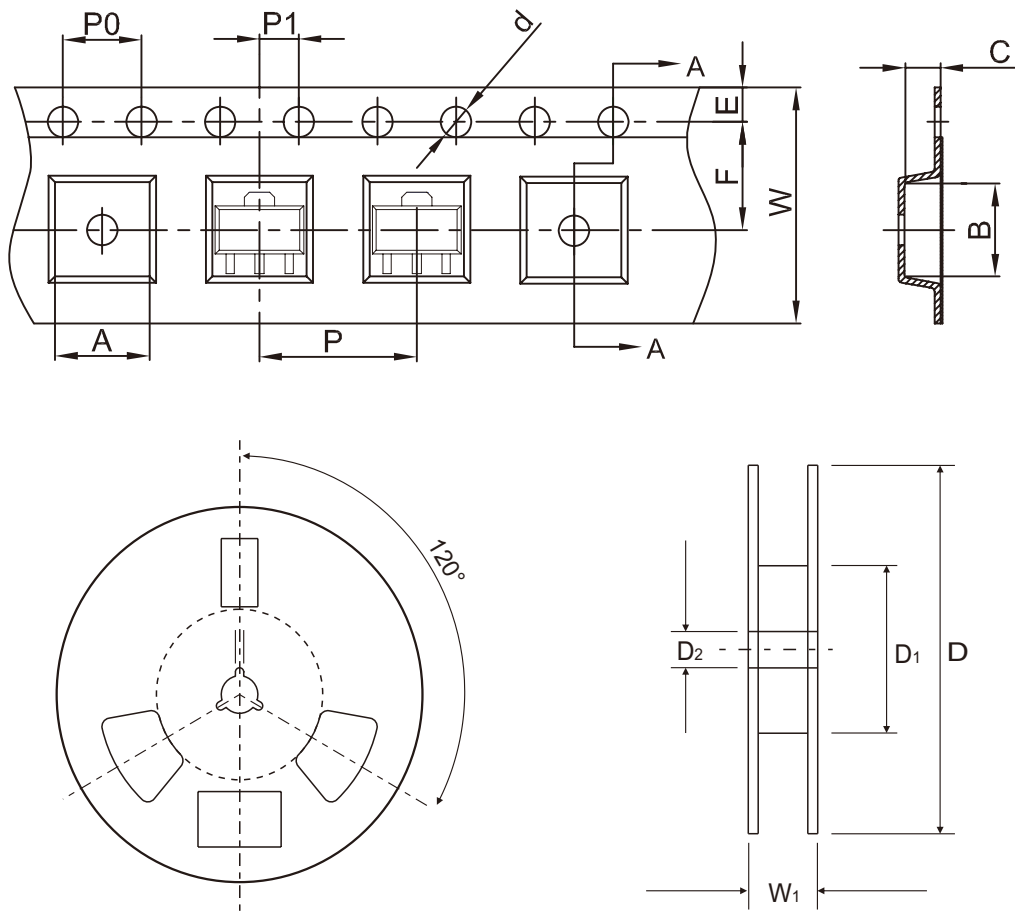


Fig.11 - Normalized Maximum Transient Thermal Impedance



Reel Taping Specification

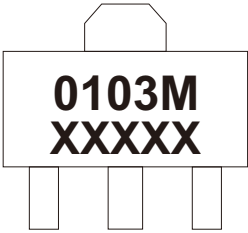


SOT-89-3L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	4.85 ± 0.10	4.45 ± 0.10	1.85 ± 0.10	1.50 ± 0.10	180 ± 2.00	60.00 ± 1.00	R32.00 ± 1.00
	(inch)	0.191 ± 0.004	0.175 ± 0.004	0.073 ± 0.004	0.059 ± 0.004	7.087 ± 0.079	2.362 ± 0.039	1.260 ± 0.039

SOT-89-3L	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	12.00 ± 0.30 / - 0.10	16.50 ± 1.00
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.158 ± 0.004	0.079 ± 0.004	0.472 ± 0.012 / - 0.004	0.650 ± 0.039

Marking Code

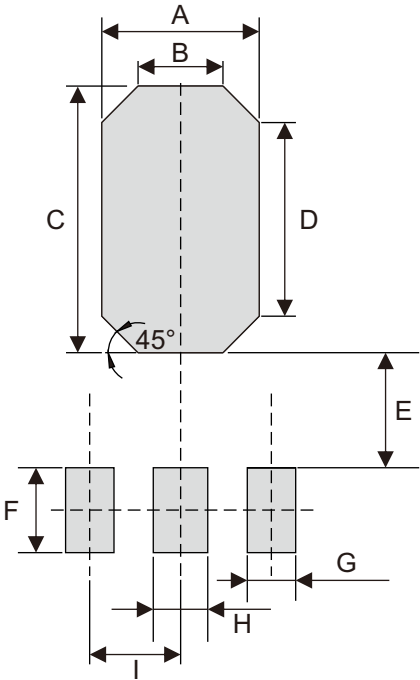
Part Number	Marking Code
CMS0103M-HF	0103M XXXXX



XXXXX = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-89-3L	
	(mm)	(inch)
A	2.60	0.102
B	1.40	0.055
C	4.40	0.173
D	3.20	0.126
E	1.90	0.075
F	1.40	0.055
G	0.80	0.032
H	0.90	0.035
I	1.50	0.059



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-89-3L	1,000	7