

BML20P07C

P-Channel MOSFET

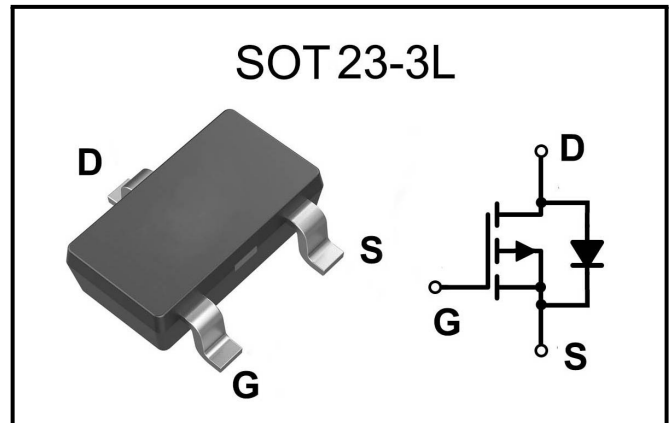
Features

- $V_{DS(V)} = -20V$
- $I_D = -7.5A$
- $R_{DS(ON)} = -4.5V, TYP = 20m\Omega$
- $R_{DS(ON)} = -2.5V, TYP = 27m\Omega$

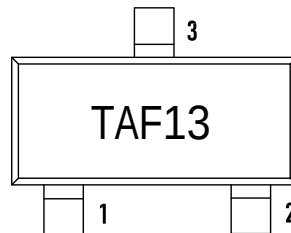
General Description

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- SOT23-3L for Surface Mount Package.

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
BML20P07C	SOT23-3L	TAF13	3K	Tape and reel

Absolute Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current($T_J = 150^\circ C$) ⁽¹⁾	$T_A = 25^\circ C$	A
		$T_A = 70^\circ C$	
I_{DM}	Pulsed drain current ⁽²⁾	-30	A
P_D	Power dissipation ⁽¹⁾	$T_A = 25^\circ C$	W
		$T_A = 70^\circ C$	
T_J	Junction Temperature Range	-55 to +150	$^\circ C$
T_{stg}	Storage Temperature Range	-55 to +150	$^\circ C$

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Thermal Characteristics

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient ⁽¹⁾	$\leq 10s$	70	$^{\circ}C/W$
		Steady-State	100	
$R_{\theta JC}$	Thermal Resistance from junction-to-case	Steady-State	63	

Notes:

(1)Surface mounted on 1" x 1" FR4 board

(2)Pulse width limited by maximum junction temperature

Electrical Characteristics @ $T_A=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
OFF Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = -250uA	-20	—	—	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V	—	—	-1	uA
I _{GSS}	Gate Body Leakage Current	V _{GS} = ±12V, V _{DS} = 0V	—	—	±0.1	uA
ON Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250uA	-0.45	-0.7	-1.2	V
R _{DS(on)}	Drain-Source On-State Resistance ⁽¹⁾	V _{GS} = -4.5V, I _D = -7A	—	20	26	mΩ
		V _{GS} =-2.5V, I _D =-4A	—	27	37	
g _{fs}	Forward Transconductance ⁽¹⁾	V _{DS} = -5V, I _D = -7A	—	5	—	S
Dynamic Characteristics ⁽²⁾						
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =-10V,f=1MHz	—	1200	—	pF
C _{oss}	Output Capacitance		—	191	—	
C _{rss}	Reverse Transfer Capacitance		—	168	—	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V,V _{GS} =-4.5V, I _D =-5A,R _L =10Ω	—	11	—	ns
t _r	Turn-On Rise Time		—	35	—	
t _{d(off)}	Turn-Off Delay Time		—	30	—	
t _f	Turn-Off Fall Time		—	10	—	
Q _g	Total gate charge	V _{GS} =-4.5V,V _{DS} =-10V, I _D =-5A	—	33.7	—	nC
Q _{gs}	Gate-source charge		—	3.5	—	
Q _{gd}	Gate-drain charge		—	10.5	—	
Drain-Source Diode Characteristics						
V _{SD}	Diode forward voltage	V _{GS} =0, I _s = -1.25A	—	-0.81	-1.2	V

Notes:

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

(2)Guaranteed by design, not subject to production testing.

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Typical Performance Characteristics($T_J = 25^\circ\text{C}$, unless otherwise noted)

Figure 1 :Output Characteristics

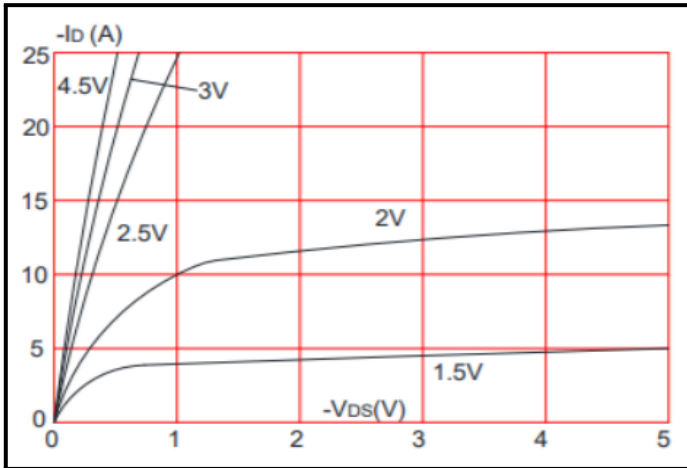


Figure 2 :Typical Transfer Characteristics

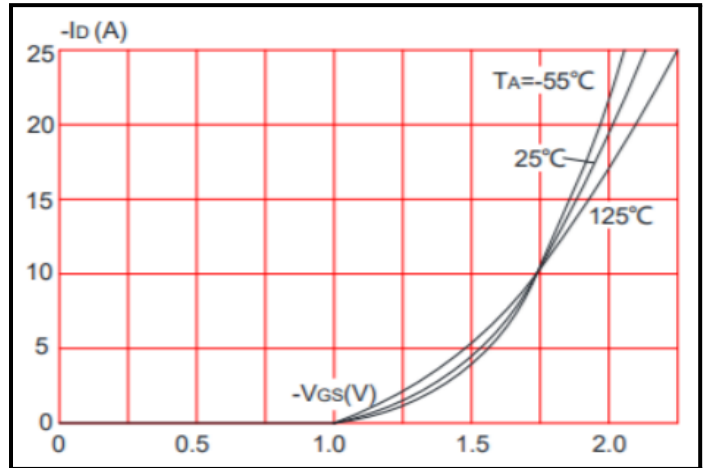


Figure 3 :On-resistance vs. Drain Current

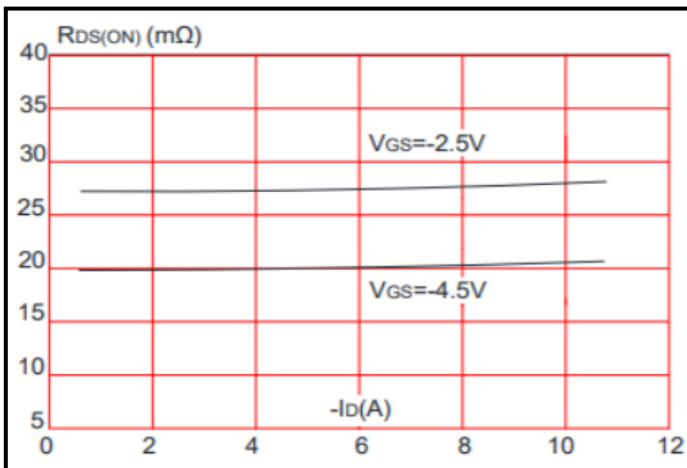


Figure 4 :Body Diode Characteristics

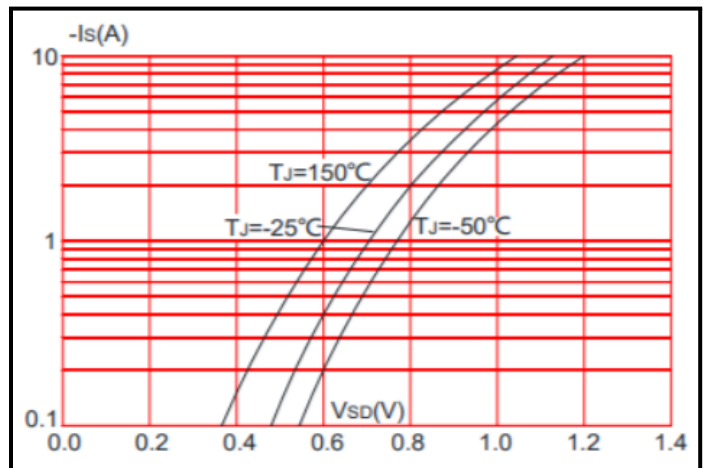


Figure 5 :Gate Charge Characteristics

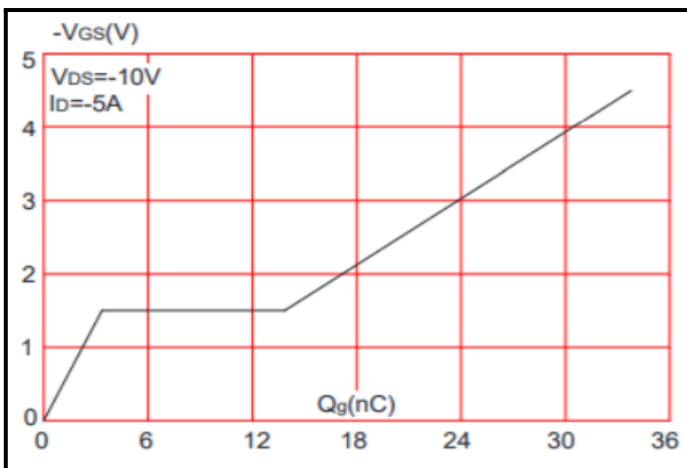
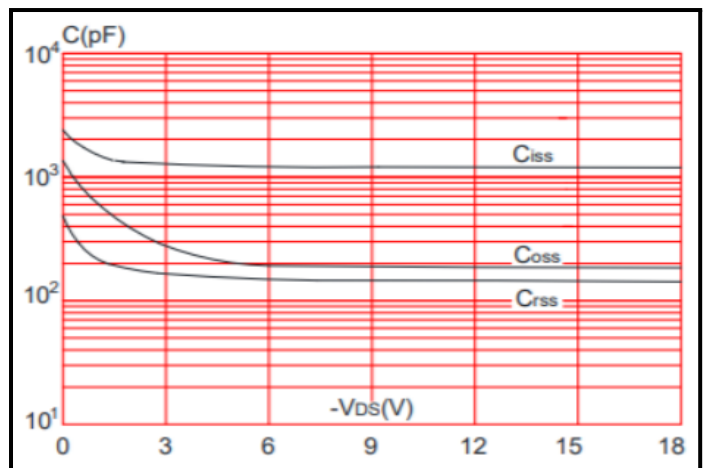


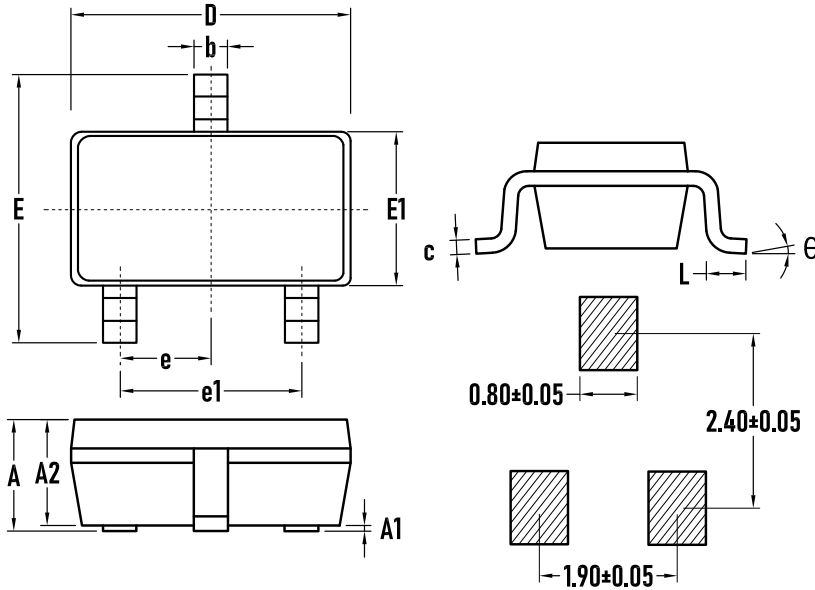
Figure 6 :Capacitance Characteristics



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Outline Drawing - SOT23-3L



SYMBOL	MILLIMETER		Inches	
	MIN.	MAX.	MIN.	MAX.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

