P-Channel Enhancement Mode Vertical D-MOS

BL05P06CES

Features

- Voltage controlled p-channel small signal switch
- High density cell design for low $R_{DS(ON)}$
- High saturation current

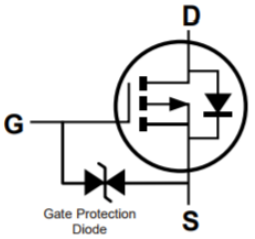
HF

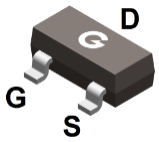
Typical Applications

- Line current interrupter in telephone sets
- High speed and line transformer drivers

Mechanical Data

- Case: SOT-23
- Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208





SOT-23

Ordering Information

Part Number	Package	Shipping	Marking Code
BL05P06CES	SOT-23	3000 pcs / Tape & Reel	05P06

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	-60	V
V_{GSS}	Gate -Source Voltage	±20	V
I_D	Continuous Drain Current	-0.5	A
I_{DM}	Peak Drain Current	-2	A
P_D	Power Dissipation	0.36	W
$R_{\Theta JA}$	Junction-to-Air	350	°C/W
T_J	Junction Temperature	-55 to +150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-60	-	-	V
I_{DSS}	Drain to Source Leakage Current	V_{DS} = -50V, V_{GS} = 0V	-	-	-100	nA
I_{GSS}	Gate-body Leakage	V_{GS} = ±20V, V_{DS} = 0V	-	-	±10	uA
ON Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *1	V_{GS} = -4.5V, I_D = -0.2A	-	-	3	Ω
		V_{GS} = -10V, I_D = -0.5A	-	-	2	
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250uA	-1	-1.8	-3	V
Dynamic Characteristics						
Ciss	Input Capacitance	V_{GS} = 0V	-	50	-	pF
Coss	Output Capacitance	V_{DS} = -25V	-	15	-	
Crss	Reverse Transfer Capacitance	f = 1.0MHz	-	5	-	
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time *2	V_{DD} = -30V, I_D = -0.27A	-	2.5	5	nS
t_r	Turn-on Rise Time *2	V_{GS} = -10V, R_G = 6Ω	-	6.3	13	
$t_{d(off)}$	Turn-Off Delay Time *2		-	10	20	
t_f	Turn-Off Fall Time *2		-	4.8	9.6	
Q_g	Total Gate Charge	V_{DS} = -25V, I_D = -0.1A	-	0.9	1.3	nC
Q_{gs}	Gate-Source Charge	V_{GS} = -5V	-	0.2	-	
Q_{gd}	Gate-Drain Charge		-	0.3	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *1	I_{SD} = -0.26A, V_{GS} = 0V	-	-0.8	-1.4	V
I_S	Diode Continuous Forward Current	T_C = 25℃	-	-	-0.5	A

Notes:

1. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
2. Guaranteed by design, not subject to production

Ratings and Characteristic Curves (@ T_A = 25°C unless otherwise specified)

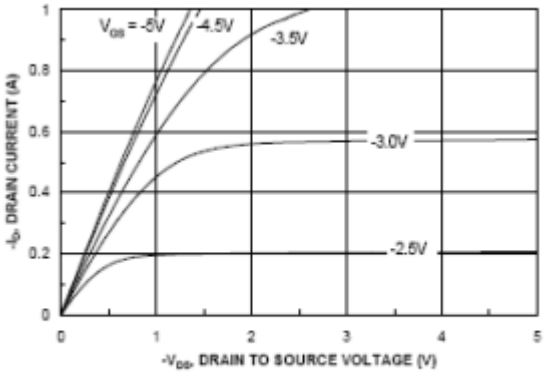


Figure 1. On-Region Characteristics.

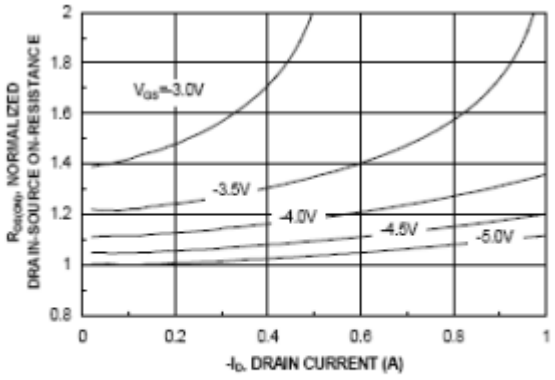


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

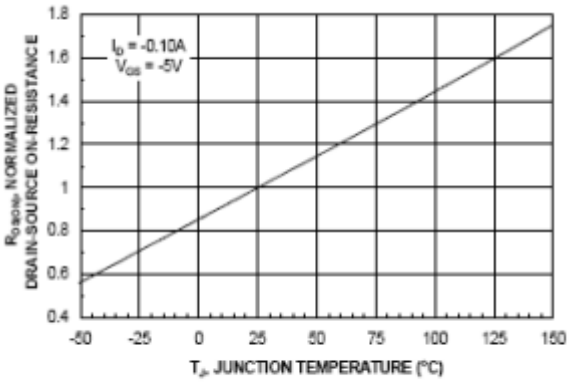


Figure 3. On-Resistance Variation with Temperature.

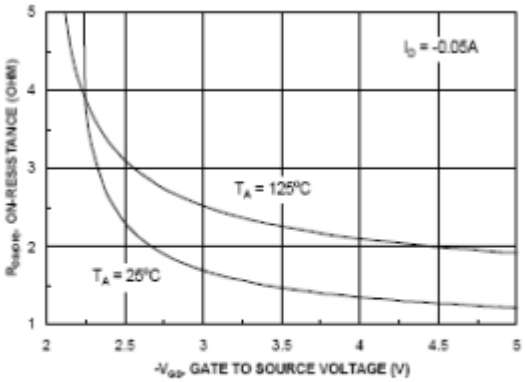


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

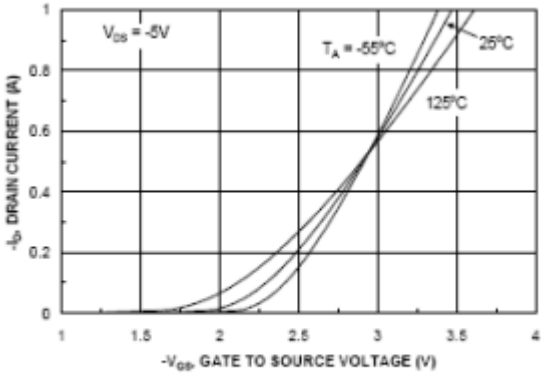


Figure 5. Transfer Characteristics.

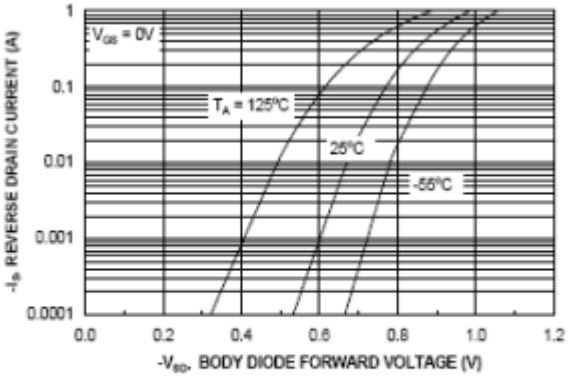


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

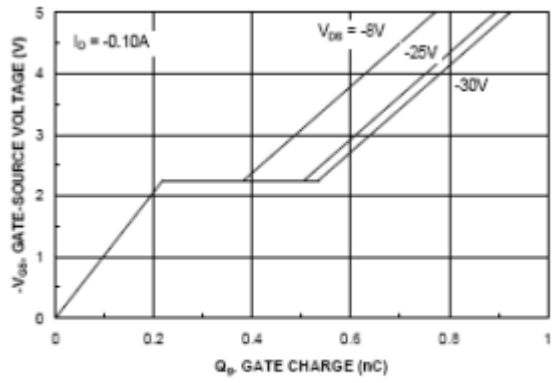


Figure 7. Gate Charge Characteristics.

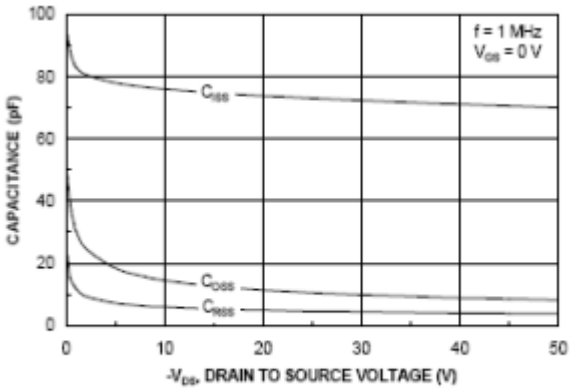


Figure 8. Capacitance Characteristics.

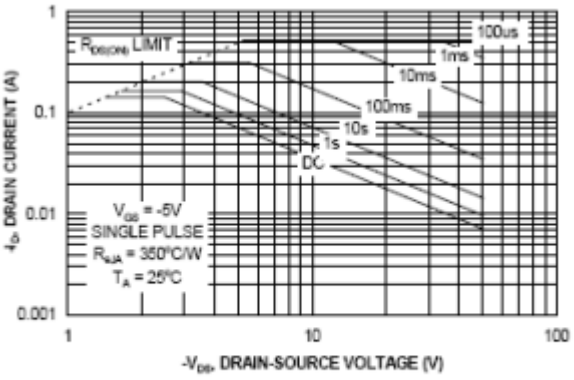


Figure 9. Maximum Safe Operating Area.

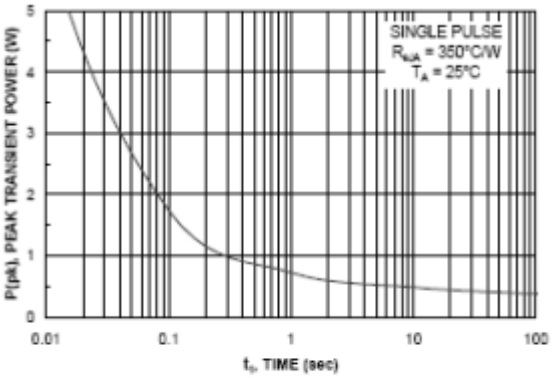


Figure 10. Single Pulse Maximum Power Dissipation.

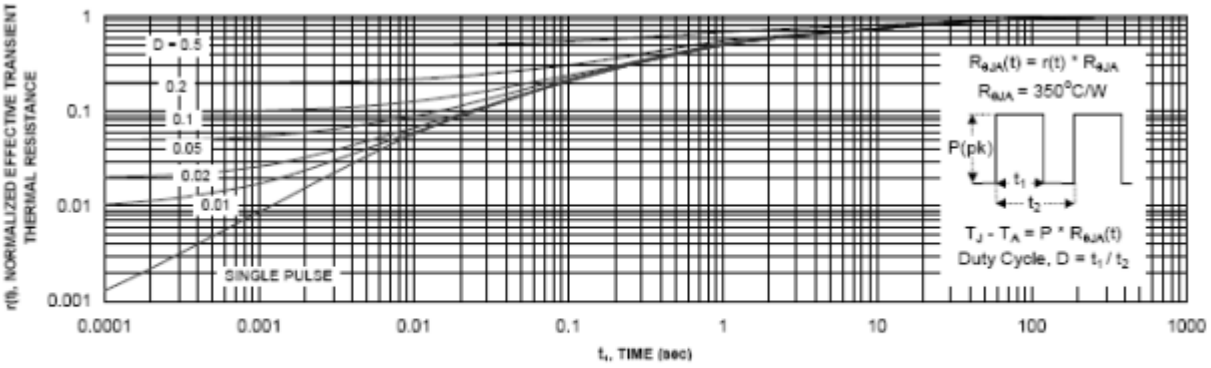
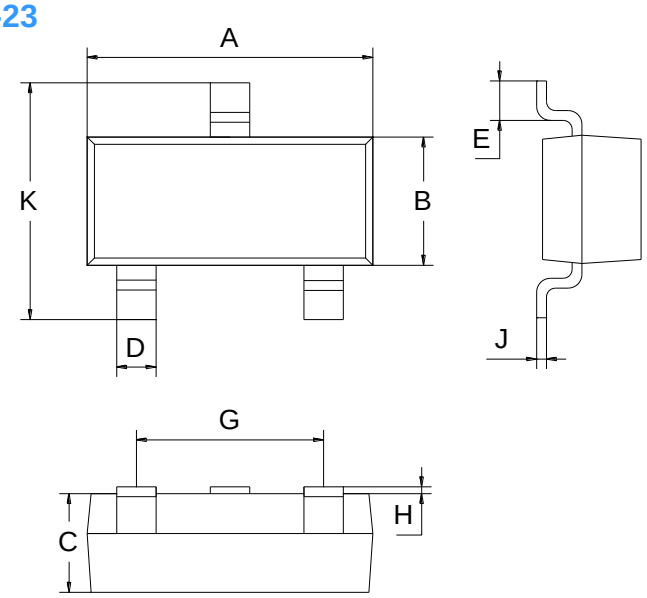


Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in Note 1a.
Transient thermal response will change depending on the circuit board design.

Package Outline Dimensions (unit: mm)

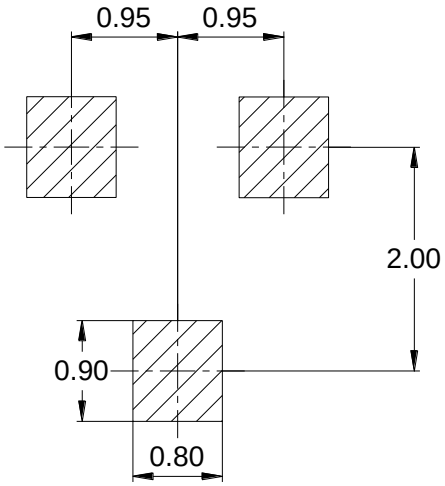
SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Mounting Pad Layout (unit: mm)

SOT-23



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