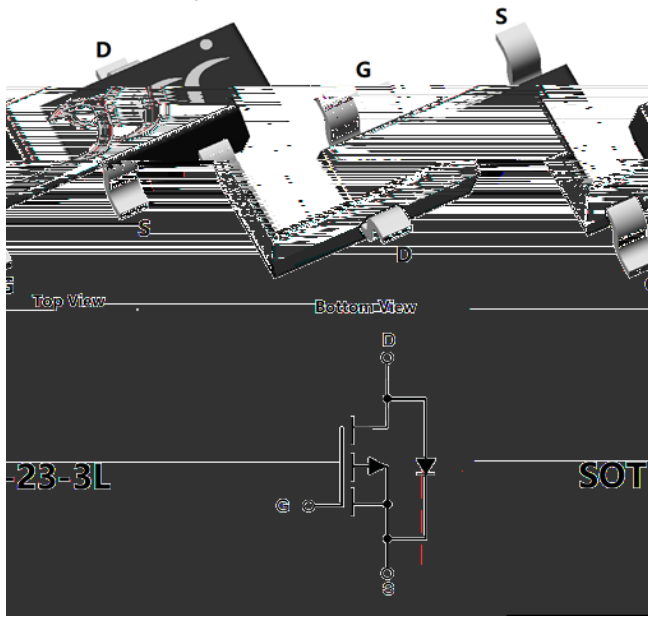


## P-Channel Enhancement Mode Field Effect Transistor



### Product Summary

$V_{DS}$	-30 V
$I_D$	-7 A
$R_{DS(ON)}$ ( at $V_{GS}=-10V$ )	21 m
$R_{DS(ON)}$ ( at $V_{GS}=-4.5V$ )	28 m

### General Description

Trench Power LV MOSFET technology  
 High density cell design for Low  $R_{DS(ON)}$   
 High Speed switching  
 I k e p p r a O a j o e e p H a r a h 1  
 Epoxy Meets UL 94 V-0 Flammability Rating  
 Halogen Free

### Applications

Battery protection  
 Load switch  
 Power management

### Absolute Maximum Ratings ( $T_A=25$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	-30	V
Gate-source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	$T_A=25$	$I_D$	-7	A
	$T_A=100$		-4	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	-60	A
Total Power Dissipation <sup>B</sup>	$T_A=25$	$P_D$	1.2	W
	$T_A=100$		0.5	
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	

### Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>C</sup>	Steady-State	$R_{\theta Jc}$	80	100	/W

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL07P03BL	F2	3007B	3000	30000	120000	3 raah



# YJL07P03BL

## Electrical Characteristics ( $T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-1, =$	-30	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	=
		$V_{DS}=-30V, V_{GS}=0V, T_J=150$	-	-	-100	
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-1, =$	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-7A$	-	16	21	i
		$V_{GS}=-4.5V, I_D=-5A$	-	21	28	
Diode Forward Voltage	$V_{SD}$	$I_S=-7A, V_{GS}=0V$	-	-0.9	-1.2	V
Gate resistance	$R_G$	$f=1MHz$	-	16	-	
Maximum Body-Diode Continuous Current	$I_S$		-	-	-7	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	-	1220	-	pF
Output Capacitance	$C_{oss}$		-	170	-	
Reverse Transfer Capacitance	$C_{rss}$		-	160	-	
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=-10V, V_{DS}=-15V, I_D=-7A$	-	24	-	nC
Gate-Source Charge	$Q_{gs}$		-	2	-	
Gate-Drain Charge	$Q_{gd}$		-	6	-	
Reverse Recovery Charge	$Q_{rr}$	$I_F=-7A, di/dt=100A/us$	-	11	-	nC
Reverse Recovery Time	$t_{rr}$		-	35	-	ns
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-15V, I_D=-7A$ $R_{GEN}=2.5$	-	11	-	ns
Turn-on Rise Time	$t_r$		-	4	-	
Turn-off Delay Time	$t_{D(off)}$		-	70	-	
Turn-off fall Time	$t_f$		-	50	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B.  $P_d$  is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.

C. The value of  $R_{\theta jc}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in the still air environment with  $T_A=25$ . The maximum allowed junction temperature of 150. The value in any given application depends on the user's specific board design.



## Typical Electrical and Thermal Characteristics Diagrams

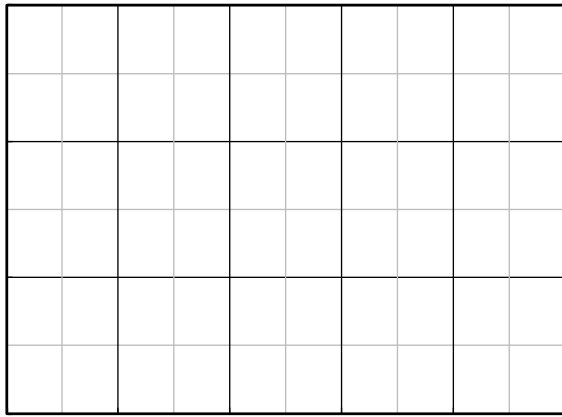


Figure 1. Output Characteristics

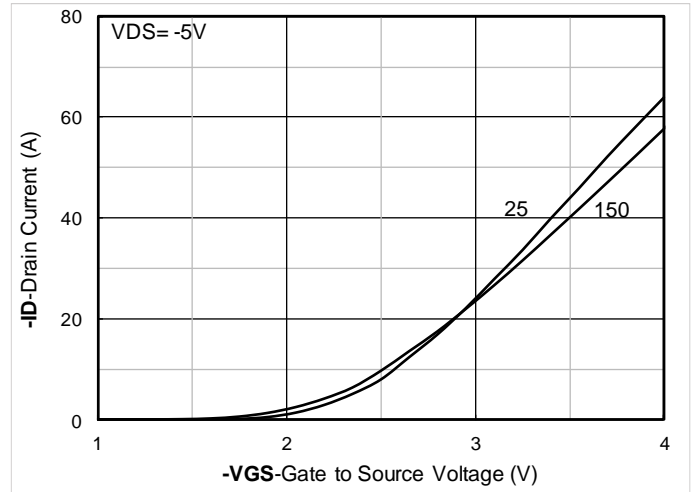


Figure 2. Transfer Characteristics

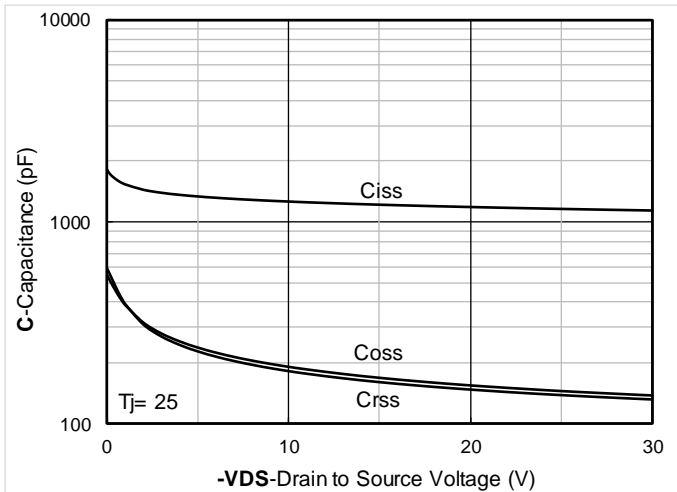


Figure 3. Capacitance Characteristics

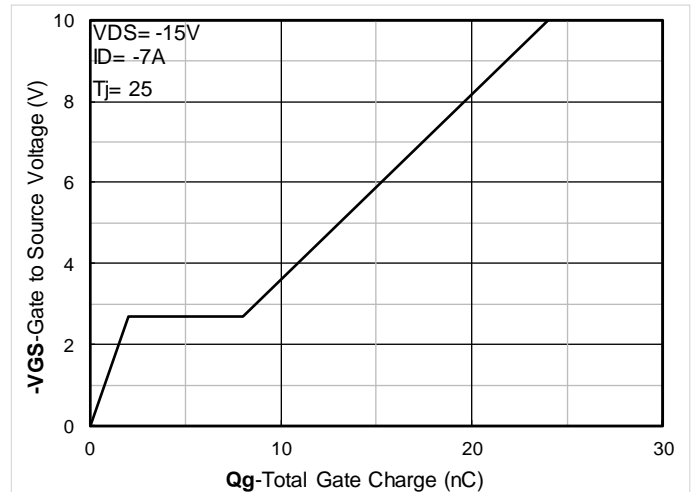


Figure 4. Gate Charge

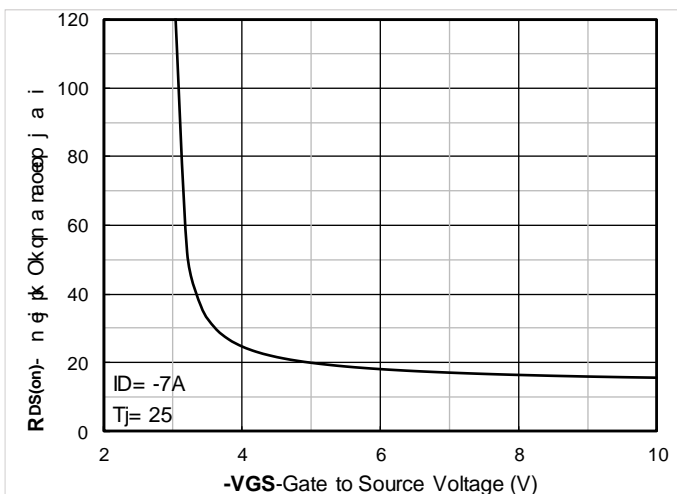


Figure 5. On-Resistance vs Gate to Source Voltage

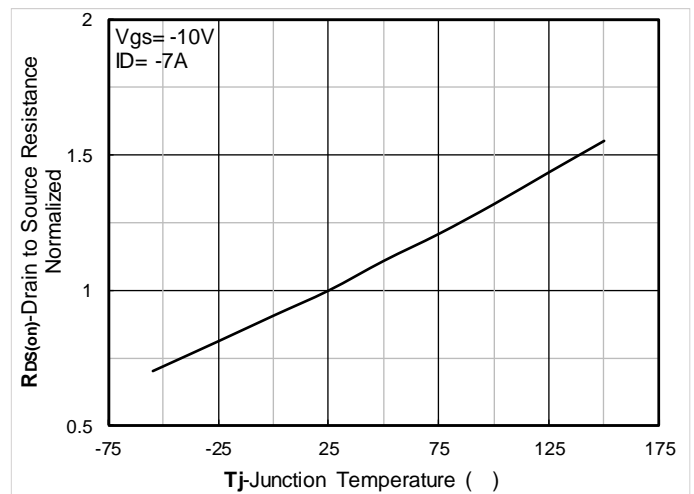


Figure 6. Normalized On-Resistance

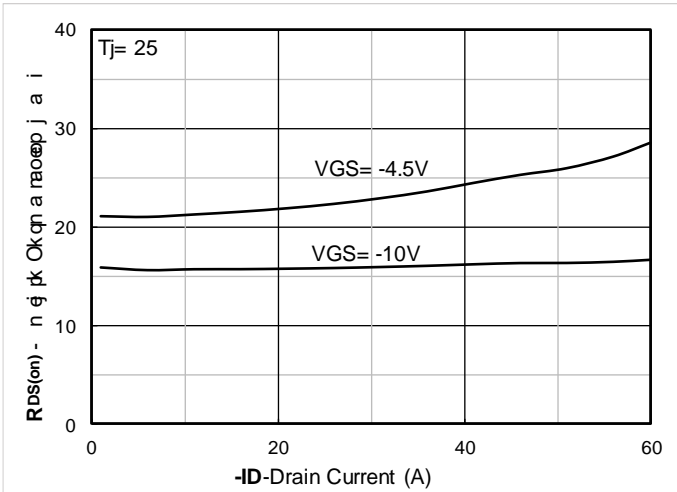


Figure 7.  $R_{DS(on)}$  VS Drain Current

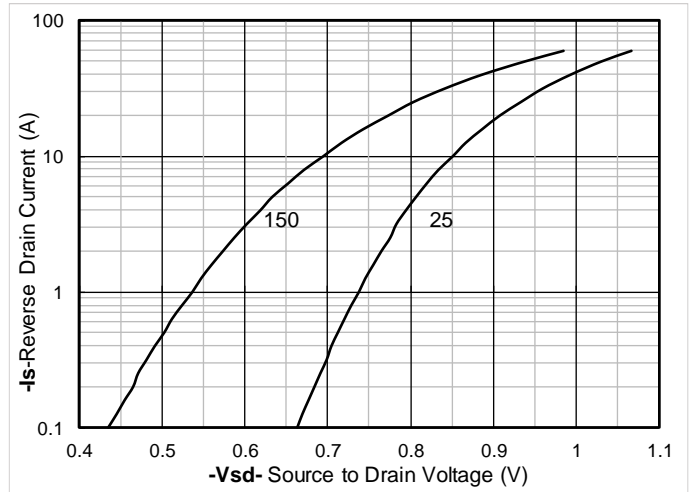


Figure 8. Forward characteristics of reverse diode

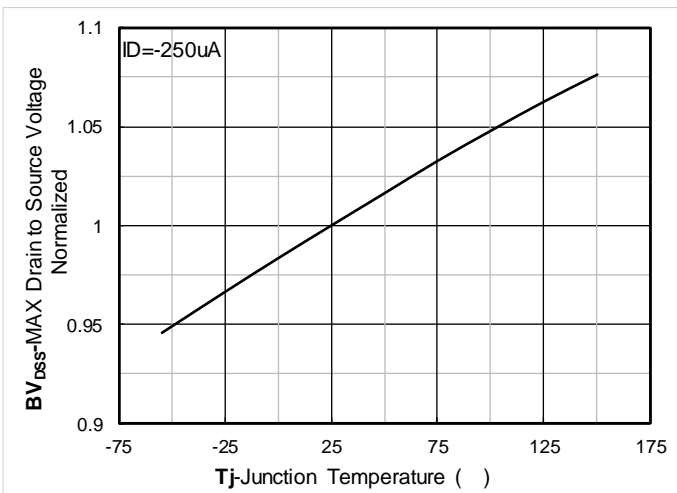


Figure 9. Normalized breakdown voltage

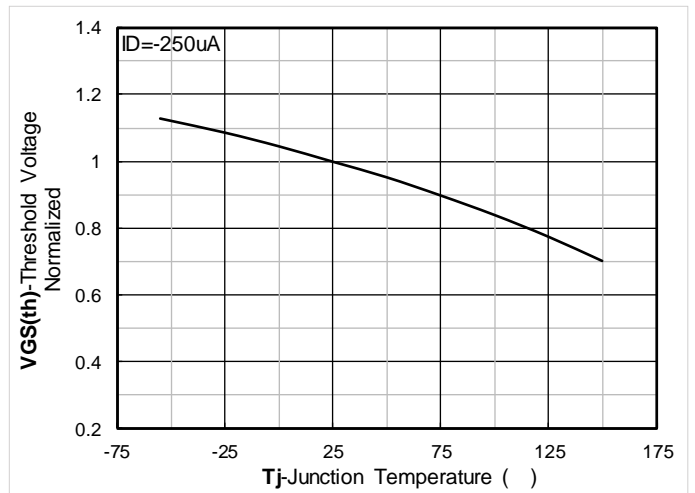


Figure 10. Normalized Threshold voltage

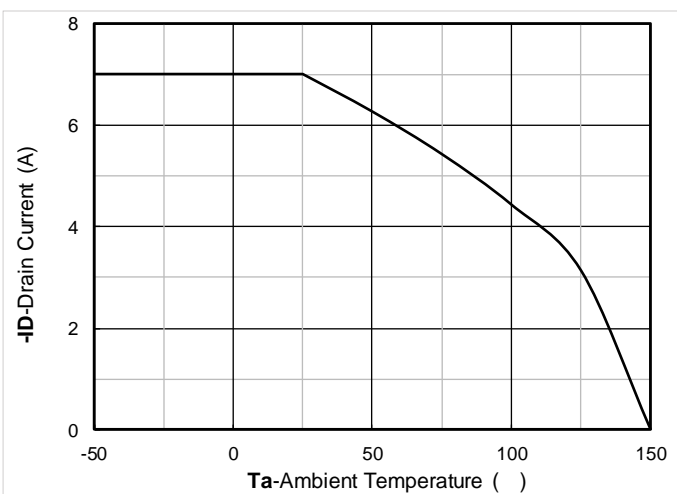


Figure 11. Current dissipation

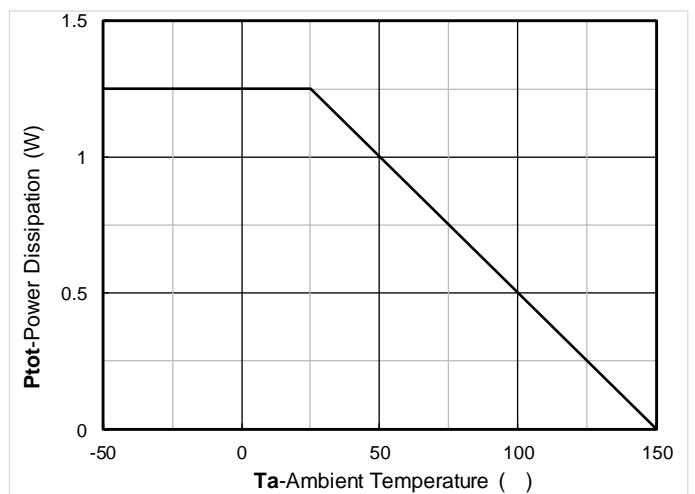


Figure 12. Power dissipation

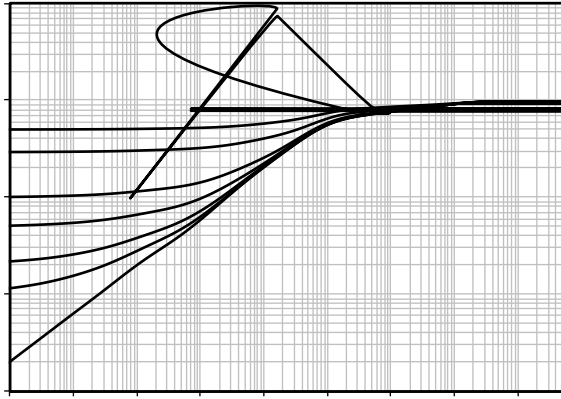
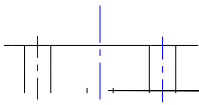
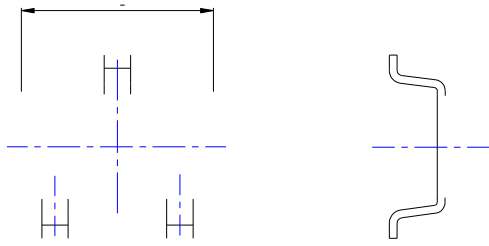


Figure 13. Maximum Transient Thermal Impedance

Figure 14. Safe Operation Area



SOT-23-3L Package information



UNIT mm



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