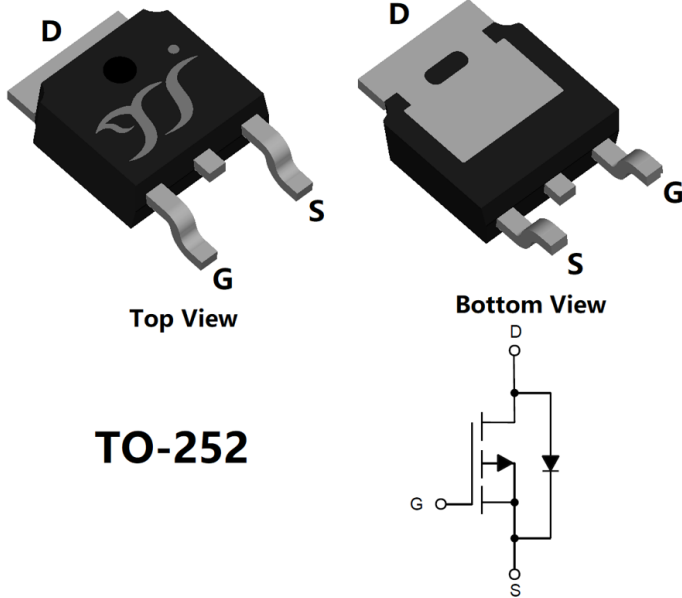


## P-Channel Enhancement Mode Field Effect Transistor



### Product Summary

$V_{DS}$	-60 V
$I_D$	-80 A
$R_{DS(ON)}$ (at $V_{GS}=-10V$ )	<8.4 m
$R_{DS(ON)}$ (at $V_{GS}=-6V$ )	<11 m
100% EAS Tested	
100% $\nabla V_{DS}$ Tested	

### General Description

Split gate trench MOSFET technology  
 Low  $R_{DS(on)}$  & FOM  
 Extremely low switching loss  
 Excellent stability and uniformity  
 Moisture Sensitivity Level 1  
 Epoxy Meets UL 94 V-0 Flammability Rating  
 Halogen Free

### Applications

Power management  
 Portable equipment

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	-60	V
Gate-source Voltage		$V_{GS}$	$\pm 18$	V
Drain Current	$T_A=25^\circ C$	$I_D$	-8	A
	$T_A=100^\circ C$		-5	
	$T_C=25^\circ C$		-80	
	$T_C=100^\circ C$		-50	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	-300	A
Avalanche energy <sup>B</sup>		EAS	506	mJ
Total Power Dissipation <sup>C</sup>	$T_A=25^\circ C$	$P_D$	1.8	W
	$T_A=100^\circ C$		0.7	
	$T_C=25^\circ C$		83	
	$T_C=100^\circ C$		33	
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~+150	$^\circ C$

### Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>D</sup>	Steady-State	$R_{JA}$	55	70	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{JC}$	1.2	1.5	

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD80GP06B	F1/F2	YJD80GP06B	2500	/	25000	13"Reel



# YJD80GP06B

## Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	$\mu A$
		$V_{DS}=-60V, V_{GS}=0V, T_J=150^\circ\text{C}$	-	-	-100	
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 18V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-2	-2.6	-3.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-40A$	-	6.5	8.4	m
		$V_{GS}=-10V, I_D=-20A$	-	6.5	8.4	
		$V_{GS}=-6V, I_D=-20A$	-	7.5	11	
Diode Forward Voltage	$V_{SD}$	$I_S=-40A, V_{GS}=0V$	-	-0.9	-1.2	V
Gate resistance	$R_G$	$f=1\text{MHz}$ , Open drain	-	8	-	
Maximum Body-Diode Continuous Current	$I_S$		-	-	-80	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, f=1\text{MHz}$	-	5600	-	$\mu F$
Output Capacitance	$C_{oss}$		-	750	-	
Reverse Transfer Capacitance	$C_{rss}$		-	90	-	
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=-10V, V_{DS}=-30V, I_D=-40A$	-	82	-	nC
Gate-Source Charge	$Q_{gs}$		-	25	-	
Gate-Drain Charge	$Q_{gd}$		-	17	-	
Reverse Recovery Charge	$Q_{rr}$	$I_F=-40A, di/dt=100A/\mu s$	-	45	-	nC



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## Typical Electrical and Thermal Characteristics Diagrams

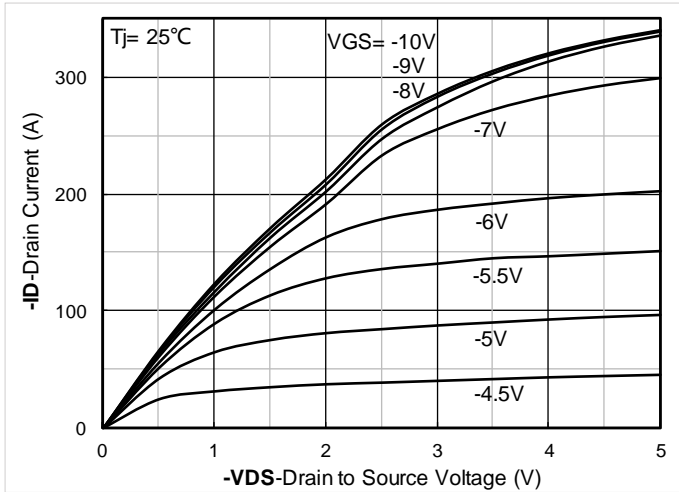


Figure 1. Output Characteristics

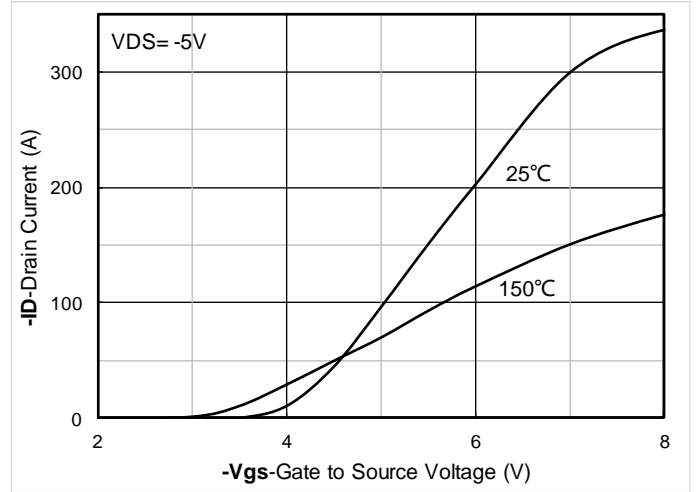


Figure 2. Transfer Characteristics

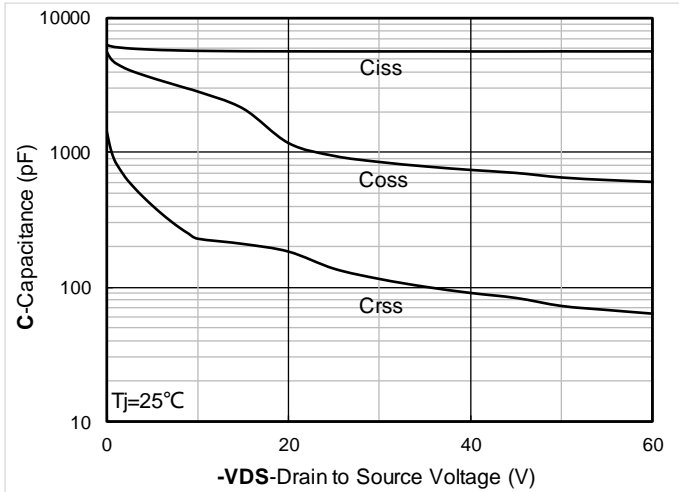


Figure 3. Capacitance Characteristics

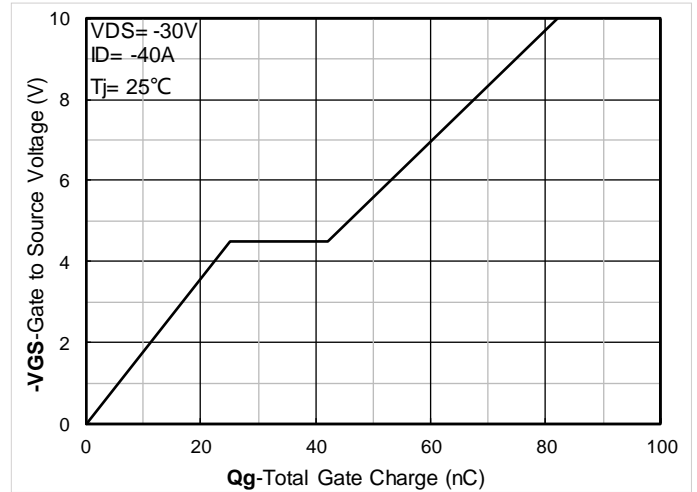


Figure 4. Gate Charge

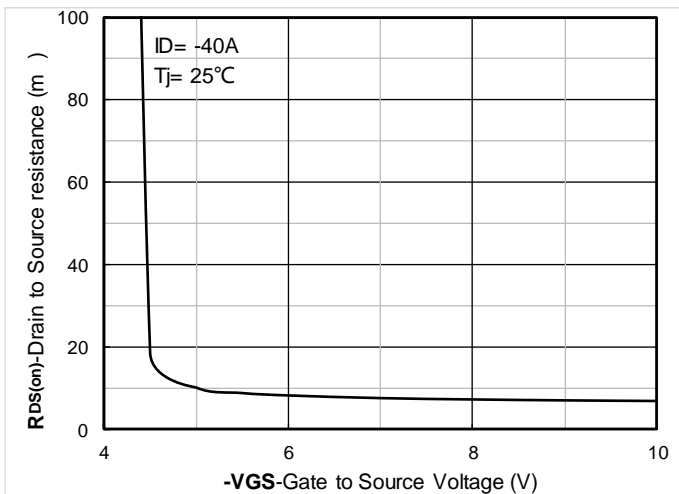


Figure 5. On-Resistance vs Gate to Source Voltage

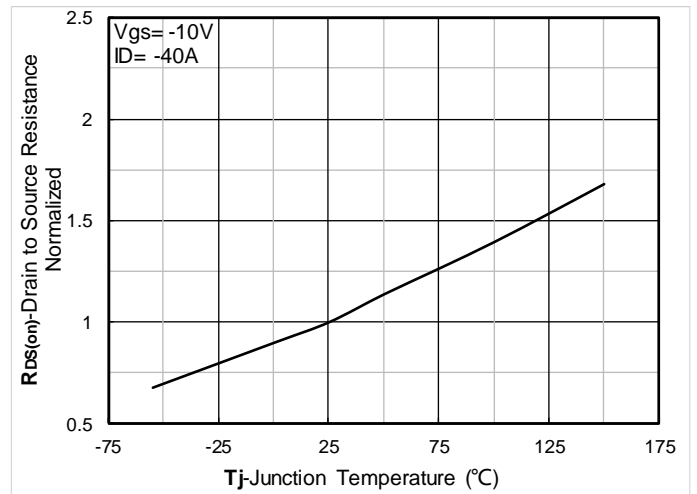


Figure 6. Normalized On-Resistance



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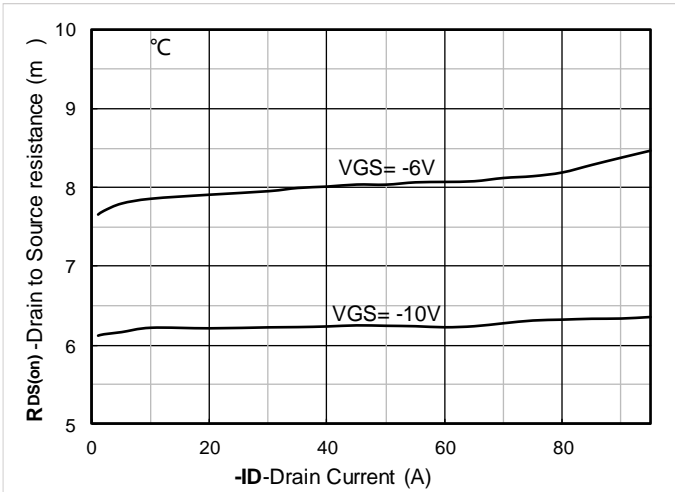


Figure 7. RDS(on) VS Drain Current

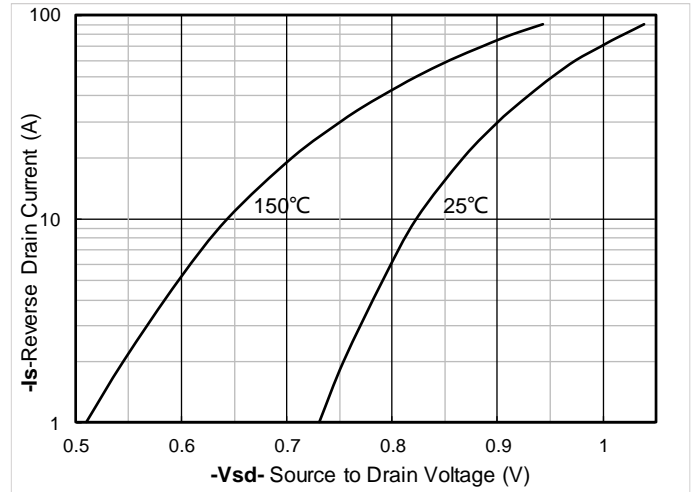


Figure 8. Forward characteristics of reverse diode

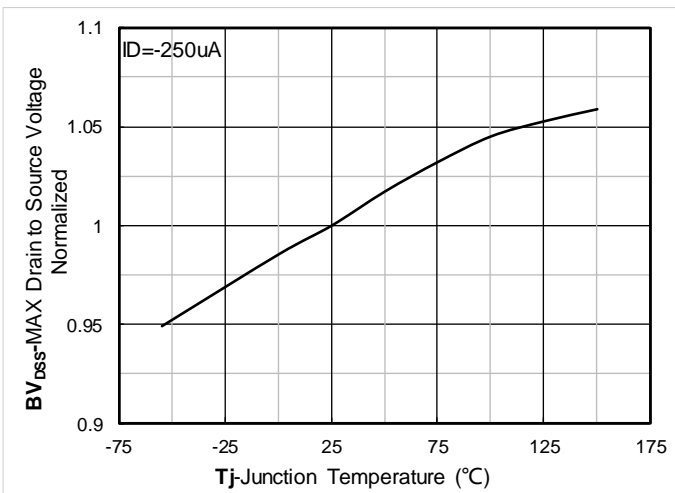


Figure 9. Normalized breakdown voltage

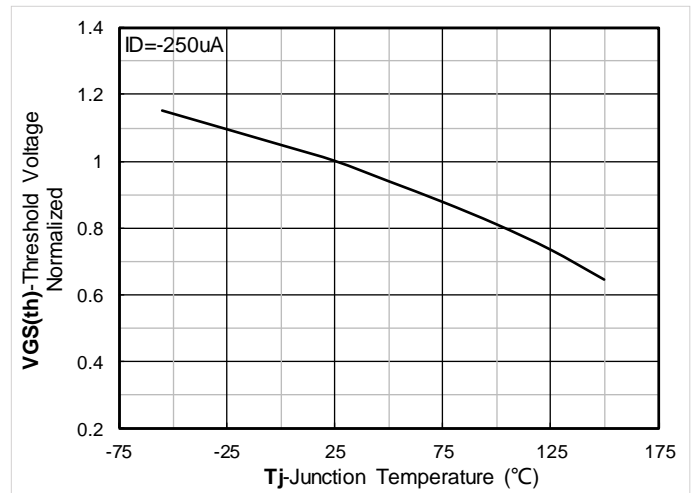


Figure 10. Normalized Threshold voltage

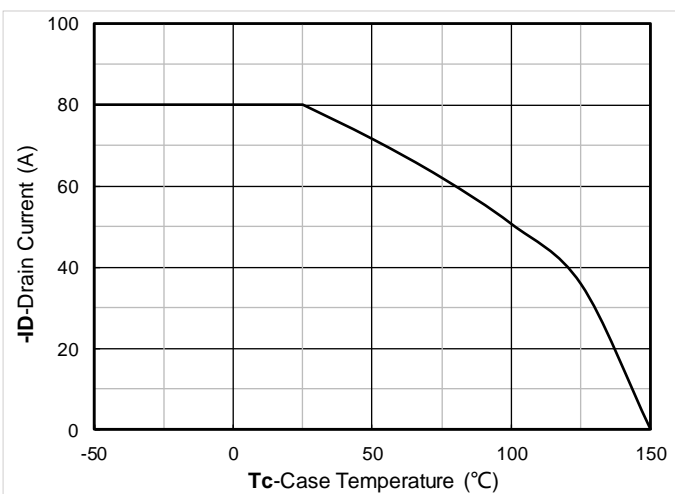


Figure 11. Current dissipation

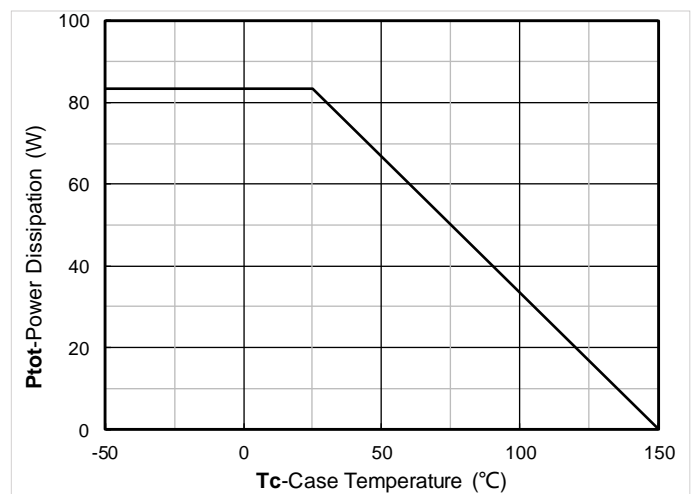


Figure 12. Power dissipation



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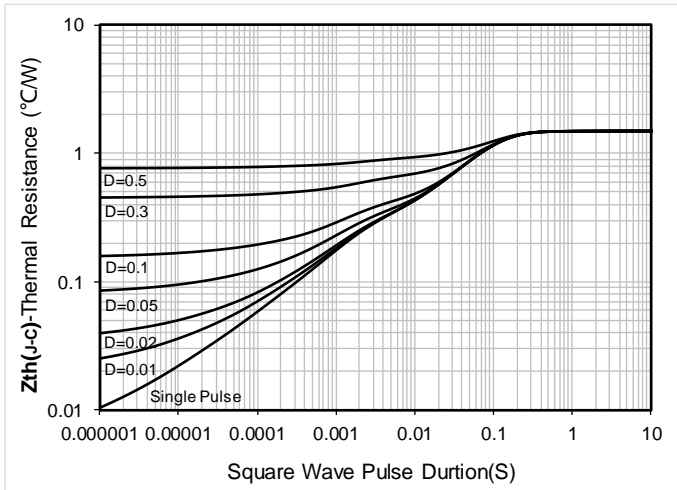


Figure 13. Maximum Transient Thermal Impedance

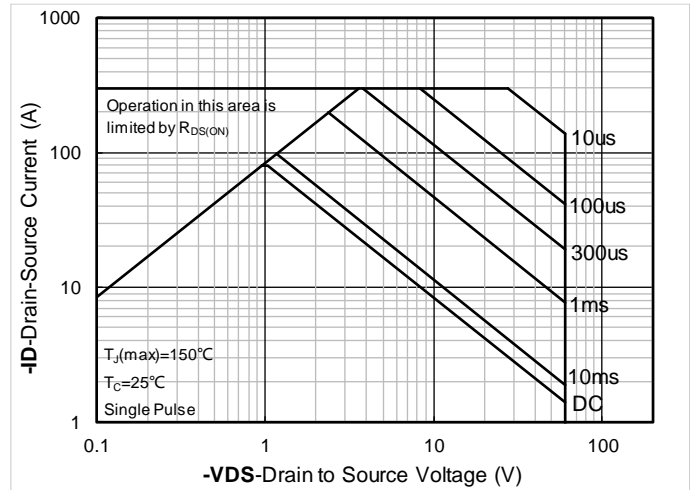
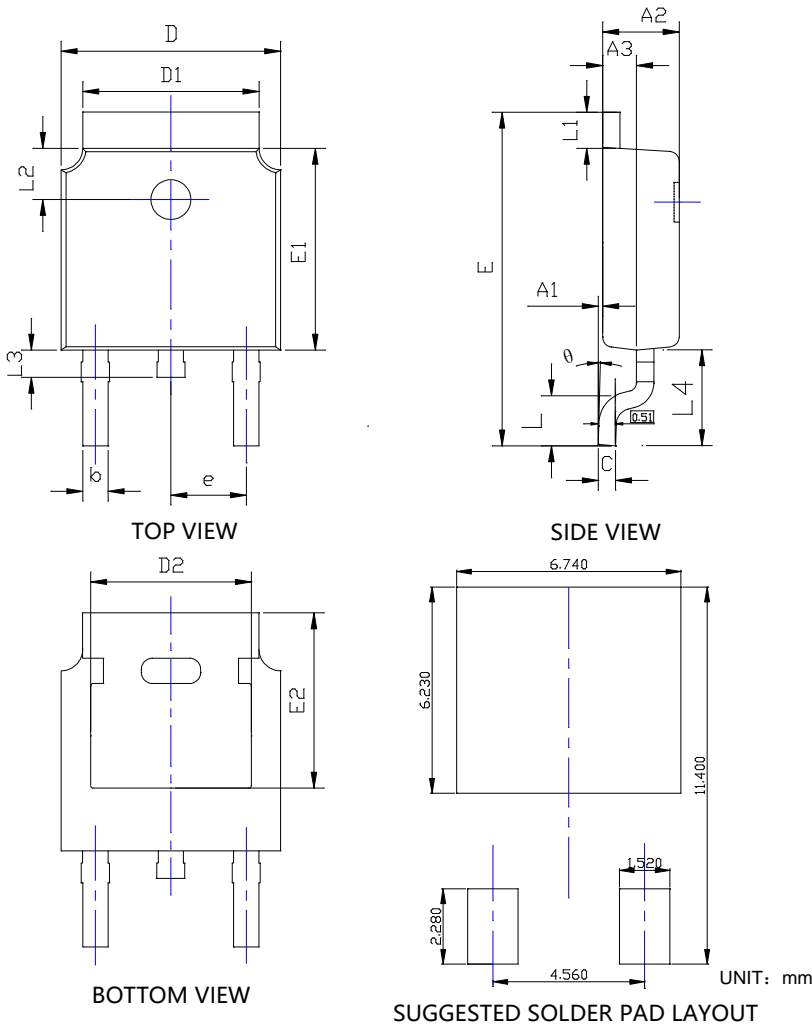


Figure 14. Safe Operation Area



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## TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.240	0.310	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
$\theta$	0°	---	10°	0°	---	10°

**NOTE:**  
 1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.  
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.  
 3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



## YJD80GP06B

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