



YJD25GP06A

P-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	-60V
I_D	-25A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	50 mohm
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	65 mohm
100% EAS Tested	
100% V_{DS} Tested	

General Description

Split gate trench MOSFET technology
 Low $R_{DS(on)}$ & FOM
 Low C_{rss}
 Extremely low switching loss
 Excellent stability and uniformity

Epoxy Meets UL 94 V-0 Flammability Rating
 Halogen Free

Applications

Synchronous Rectification in DC/DC and AC/DC
 Converters
 Industrial and Motor Drive applications

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-60	V
Gate-source Voltage		V_{GS}	20	V
Drain Current	$T_C=25$	I_D	-25	A
	$T_C=100$		-16	
Pulsed Drain Current ^A		I_{DM}	-100	A
Avalanche energy ^B		EAS	49	mJ
Total Power Dissipation ^C	$T_C=25$	P_D	72	W
	$T_C=100$		28.8	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 +150	



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250$	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	$T_J=25$		-1	
			$T_J=55$		-5	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250$	-1.3	-1.8	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		38	50	m
		$V_{GS}=-4.5V, I_D=-10A$		48	65	
Gate Resistance	R_g	$f=1MHz, \text{Open Drain}$		12		
Diode Forward Voltage	V_{SD}	$I_S=-20A, V_{GS}=0V$		-0.95	-1.3	V
Maximum Body-Diode Continuous Current	I_S				-25	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$		1100		pF
Output Capacitance	C_{oss}			350		
Reverse Transfer Capacitance	C_{rss}			28		
Switching Parameters						
Total Gate Charge	$Q_{g(-10V)}$	$V_{GS}=-10V, V_{DS}=-30V, I_D=-20A$		18.7		nC
Total Gate Charge	$Q_{g(-4.5V)}$			8.8		
Gate-Source Charge	Q_{gs}			4.7		
Gate-Drain Charge	Q_{gd}			3.0		
Reverse Recovery Charge	Q_{rr}	$I_F=-20A, di/dt=100A/us$		8.2		ns
Reverse Recovery Time	t_{rr}			20.2		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-30V, I_D=-12A$ $R_{GEN}=6$		7.5		ns
Turn-on Rise Time	t_r			39.5		
Turn-off Delay Time	$t_{D(off)}$			43.6		
Turn-off fall Time	t_f			55.1		

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

B. $V_{DD}=50V, R_G=0.5mH, I_{AS}=14A$.

C. Pd is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{qJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25$ C. The



Typical Performance Characteristics

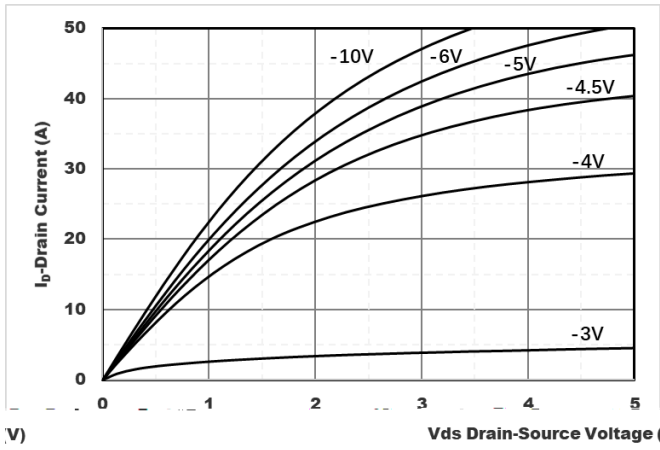


Figure1. Output Characteristics

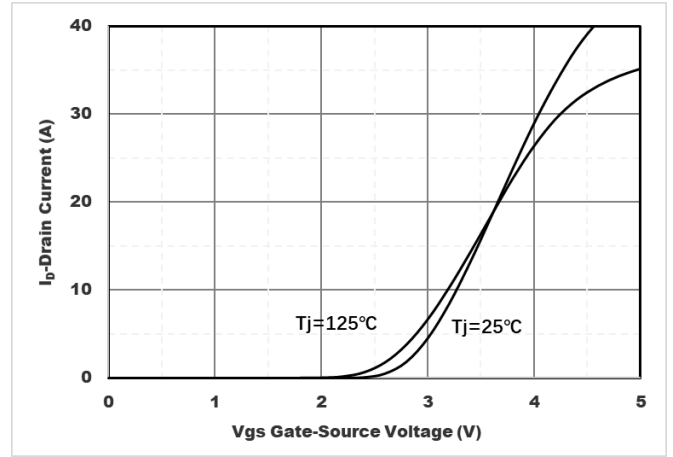


Figure2. Transfer Characteristics

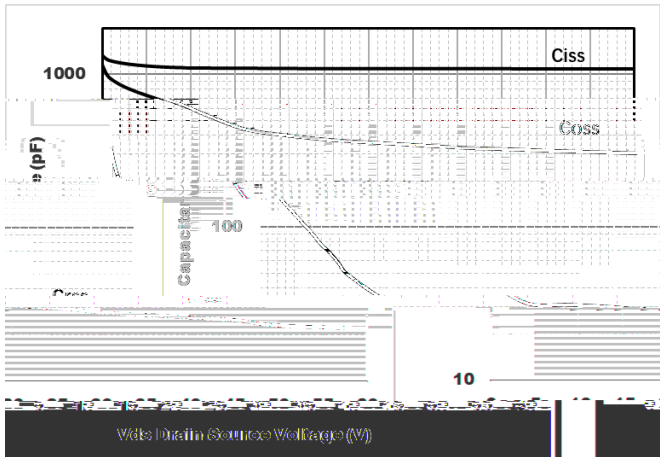


Figure3. Capacitance Characteristics

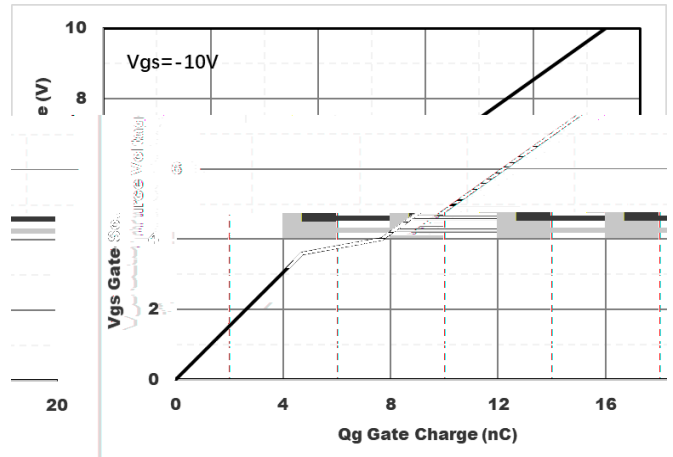


Figure4. Gate Charge

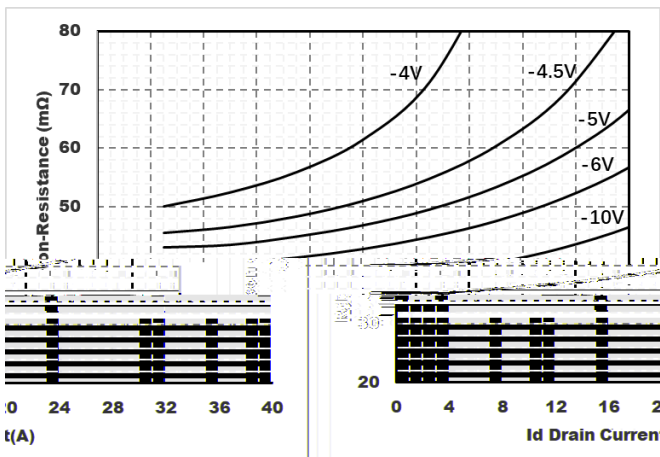


Figure5. : On-Resistance vs. Drain Current

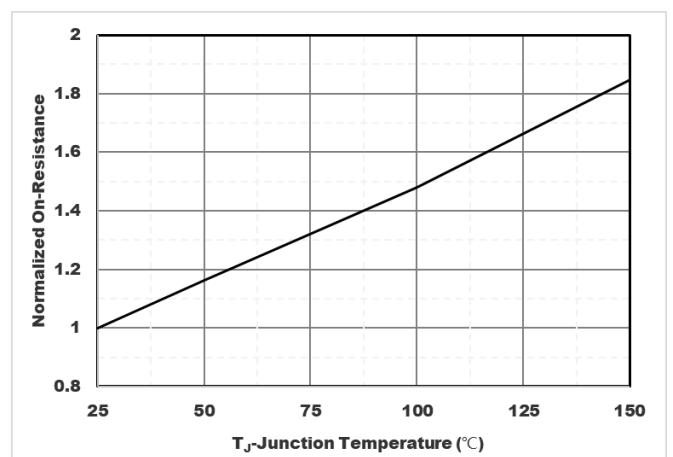


Figure6. Normalized On-Resistance



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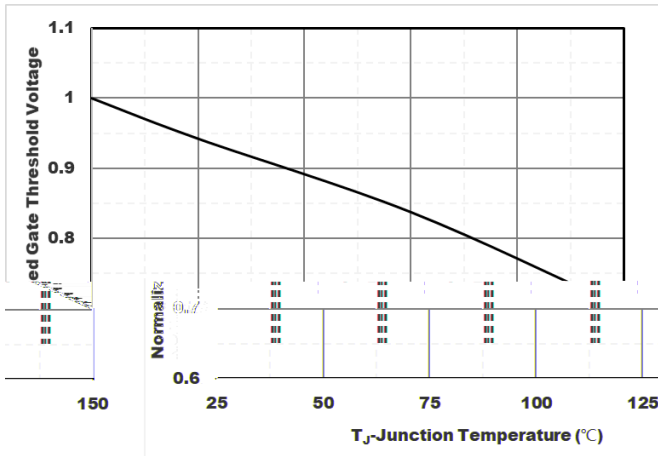


Figure 7. Normalized Gate Threshold Voltage

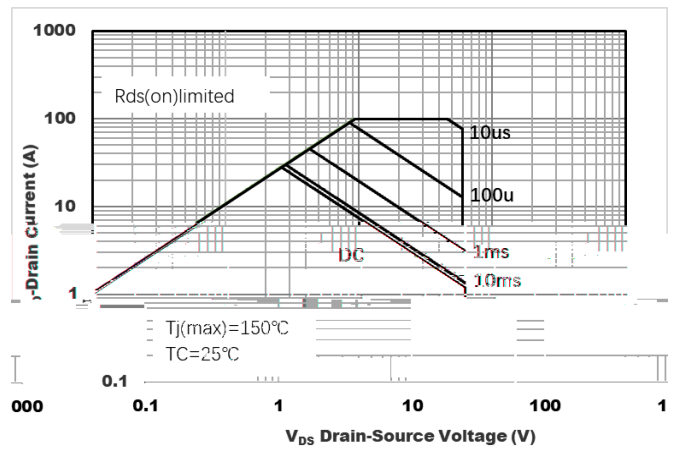


Figure 8. Safe Operation Area

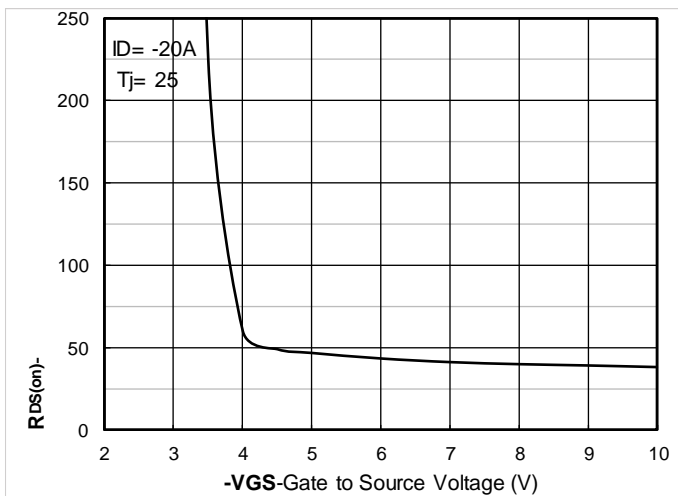


Figure 9. On-Resistance vs Gate to Source Voltage

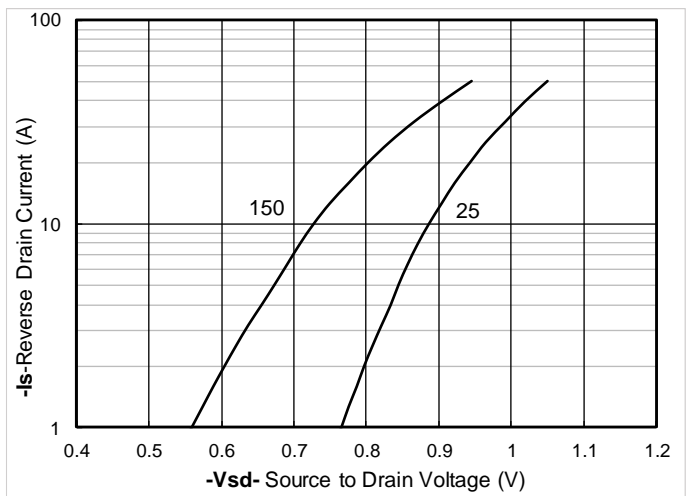


Figure 10. Forward characteristics of reverse diode

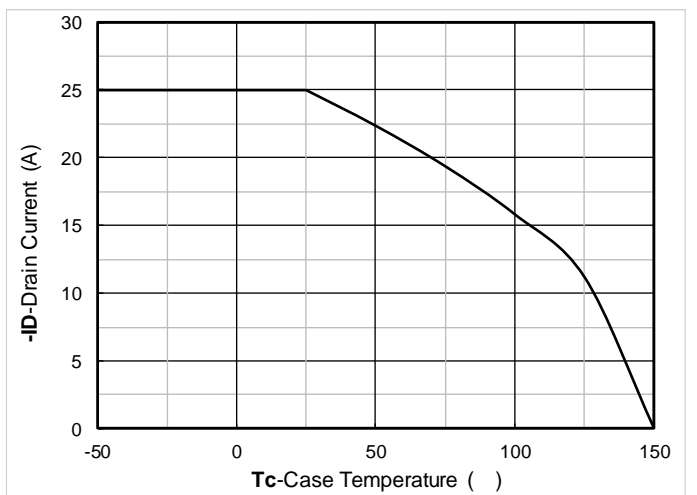


Figure 11. Normalized breakdown voltage

Figure 12. Current dissipation



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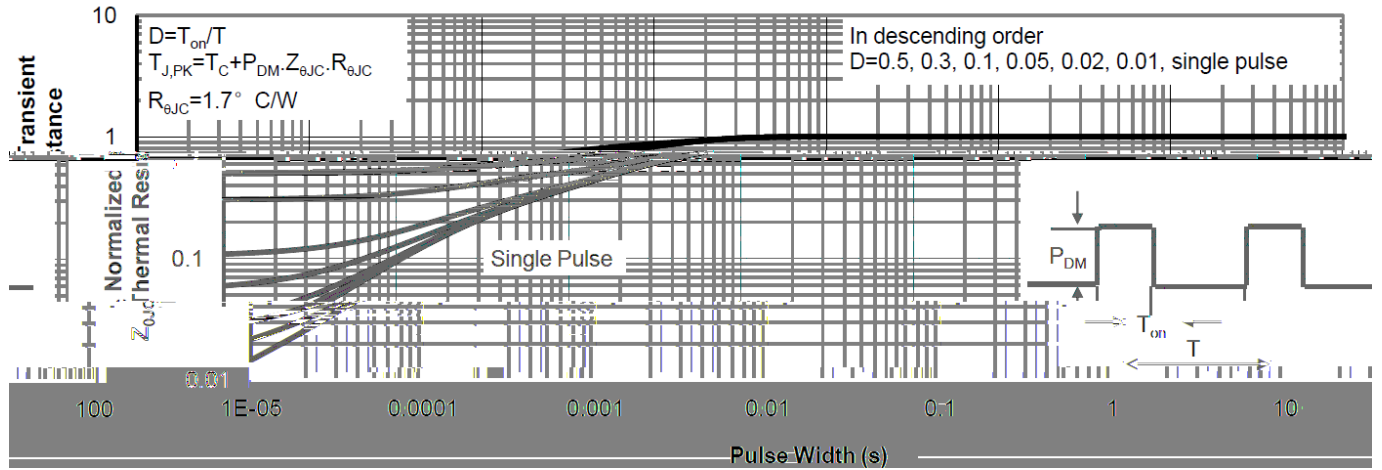
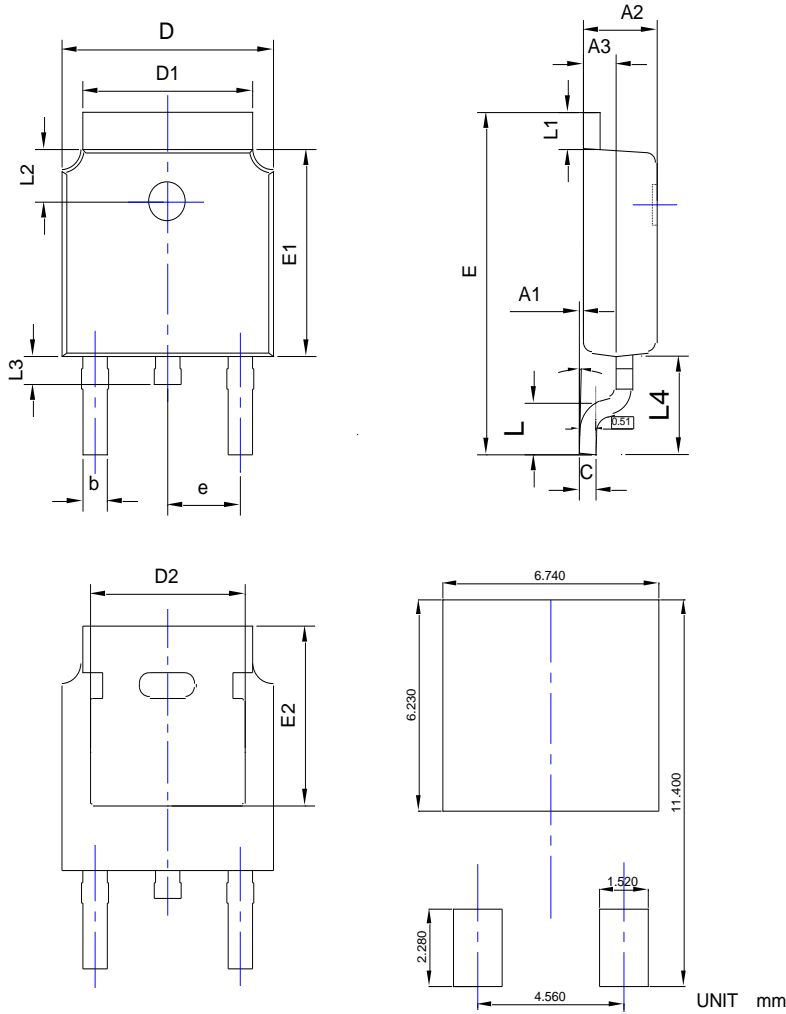


Figure13.Normalized Maximum Transient thermal impedance



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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	0.024	0.031	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
	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.



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