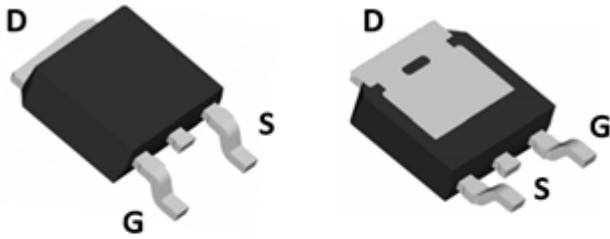
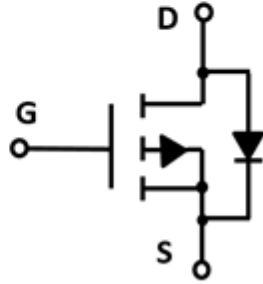


P-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} -60V
- I_D -30A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <40 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <55 mohm
- 100% UIS 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

Applications

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

■ 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}	± 20	V
Drain Current	$T_C=25^\circ C$	I_D	-30	A
	$T_C=100^\circ C$		-19	
Pulsed Drain Current ^A		I_{DM}	-120	A
Avalanche energy ^B		E_{AS}	81	mJ
Total Power Dissipation ^C	$T_C=25^\circ C$	P_D	72	W
	$T_C=100^\circ C$		28.8	
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 ^D	$t \leq 10S$	$R_{\theta JA}$	15	20	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.35	1.7	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD30GP06A	F1	YJD30GP06A	2500	2500	25000	13" reel



YJD30GP06A

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V	T _J =25°C		-1	μA
			T _J =55°C		-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 =-250μA	-1.5	-2.1	-2.7	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-20A		30	40	mΩ
		V _{GS} = -4.5V, I _D =-10A		41	55	
Diode Forward Voltage	V _{SD}	I _S =-20A, V _{GS} =0V			-1.3	V
Maximum Body-Diode Continuous Current	I _S				-30	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f=1MHZ		1050		pF
Output Capacitance	C _{oss}			340		
Reverse Transfer Capacitance	C _{rss}			62		
Switching Parameters						
Total Gate Charge	Q _{g(-10V)}	V _{GS} =-10V, V _{DS} =-30V, I _D =-20A		19.3		nC
Total Gate Charge	Q _{g(-4.5V)}			8.8		
Gate-Source Charge	Q _{gs}			5.3		
Gate-Drain Charge	Q _{gd}			3.1		
Reverse Recovery Charge	Q _{rr}	I _F =-20A, di/dt=100A/us		3.9		
Reverse Recovery Time	t _{rr}			19		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-30V, R _L =2.5Ω R _{GEN} =6Ω		6		ns
Turn-on Rise Time	t _r			45.6		
Turn-off Delay Time	t _{D(off)}			42.8		
Turn-off fall Time	t _f			75.6		

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

B. V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=25A,.

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 Power dissipation PDSM is based on R_{qJA} ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



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■ Typical Performance Characteristics

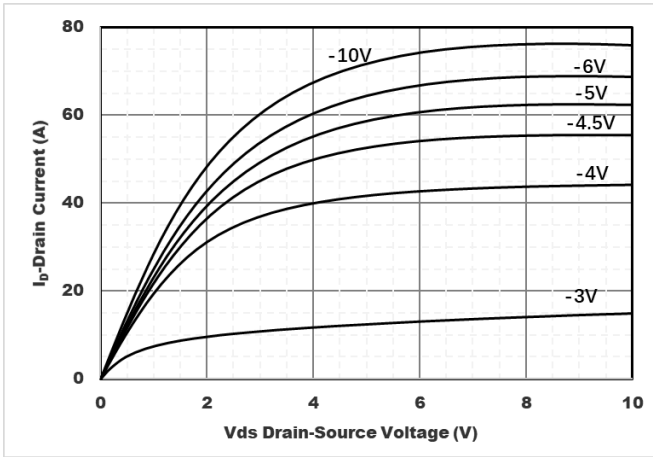


Figure1. Output Characteristics

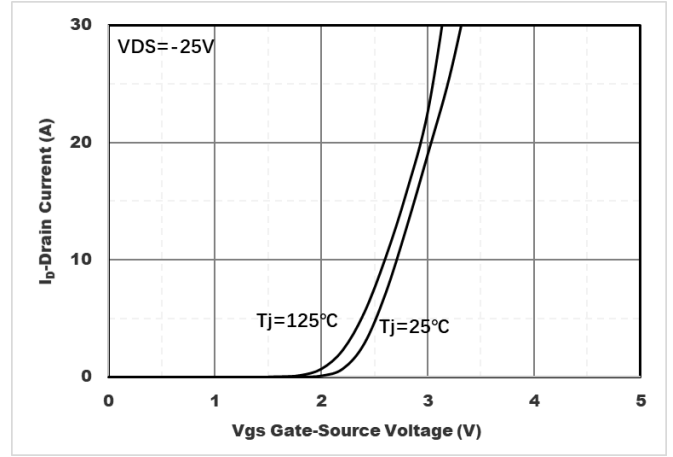


Figure2. Transfer Characteristics

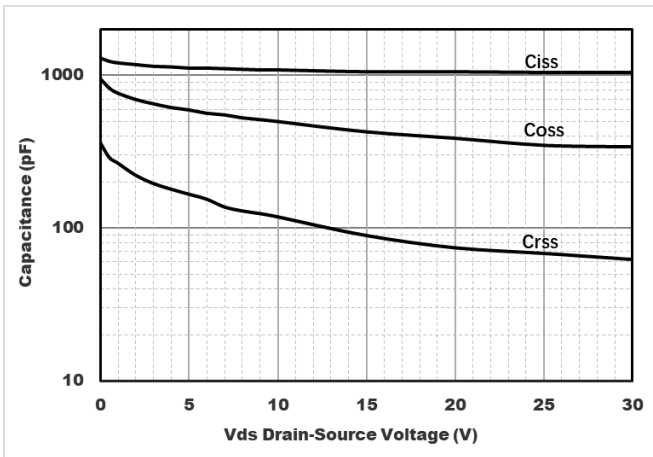


Figure3. Capacitance Characteristics

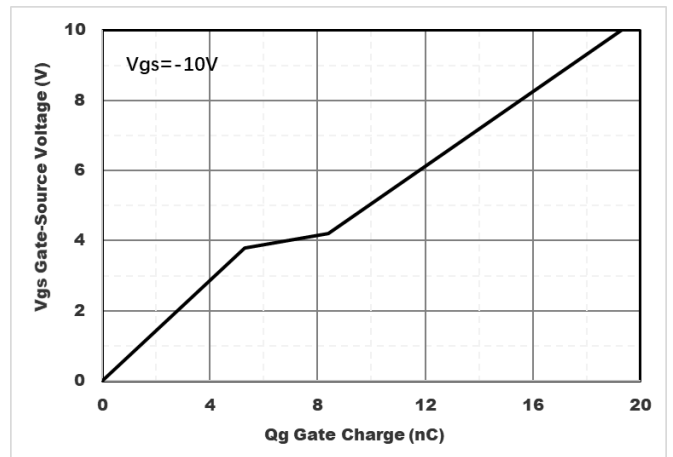


Figure4. Gate Charge

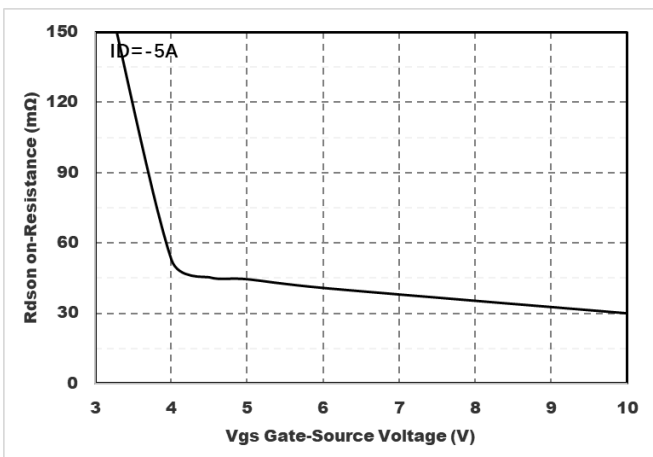


Figure5. : On-Resistance vs. Gate to Source Voltage

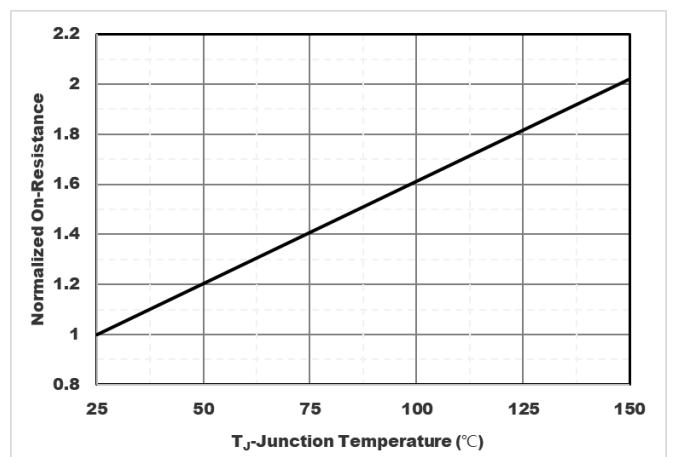


Figure6. Normalized On-Resistance



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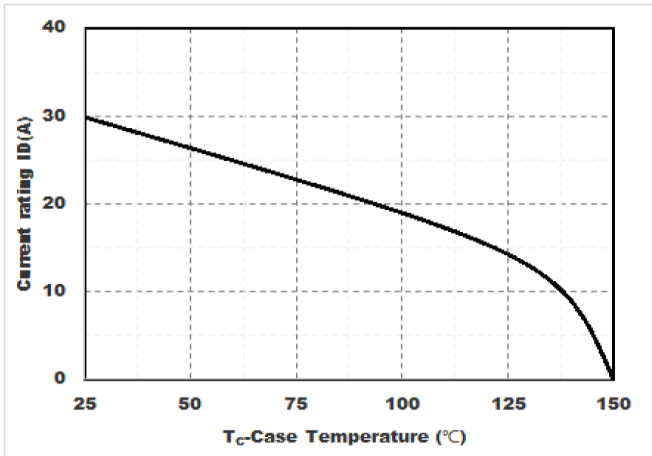


Figure7. Drain current

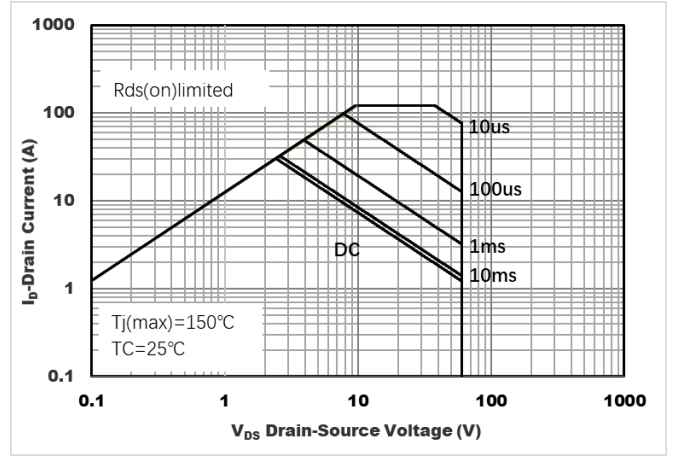


Figure8.Safe Operation Area

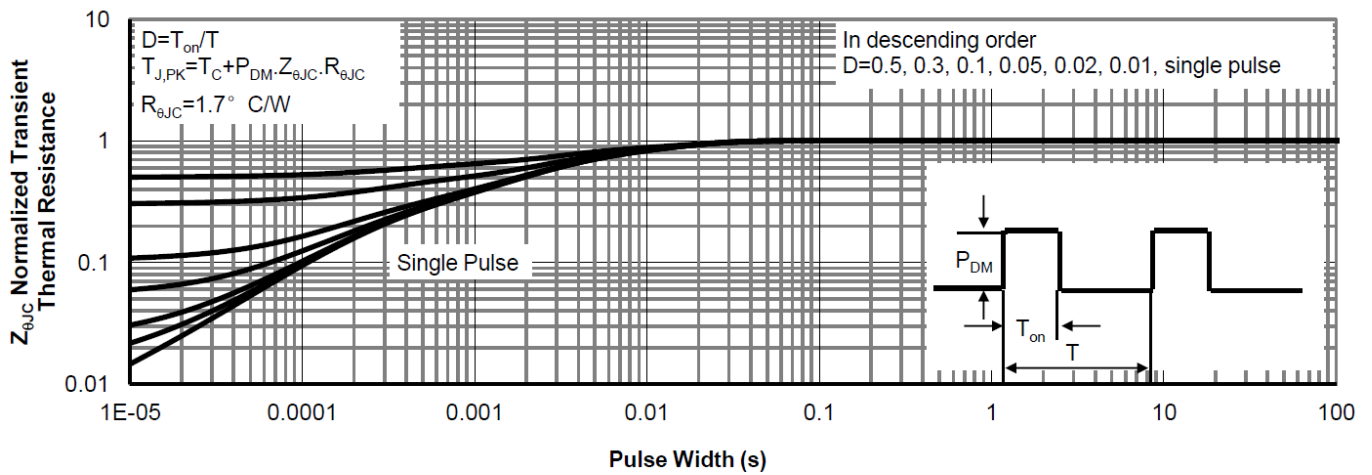
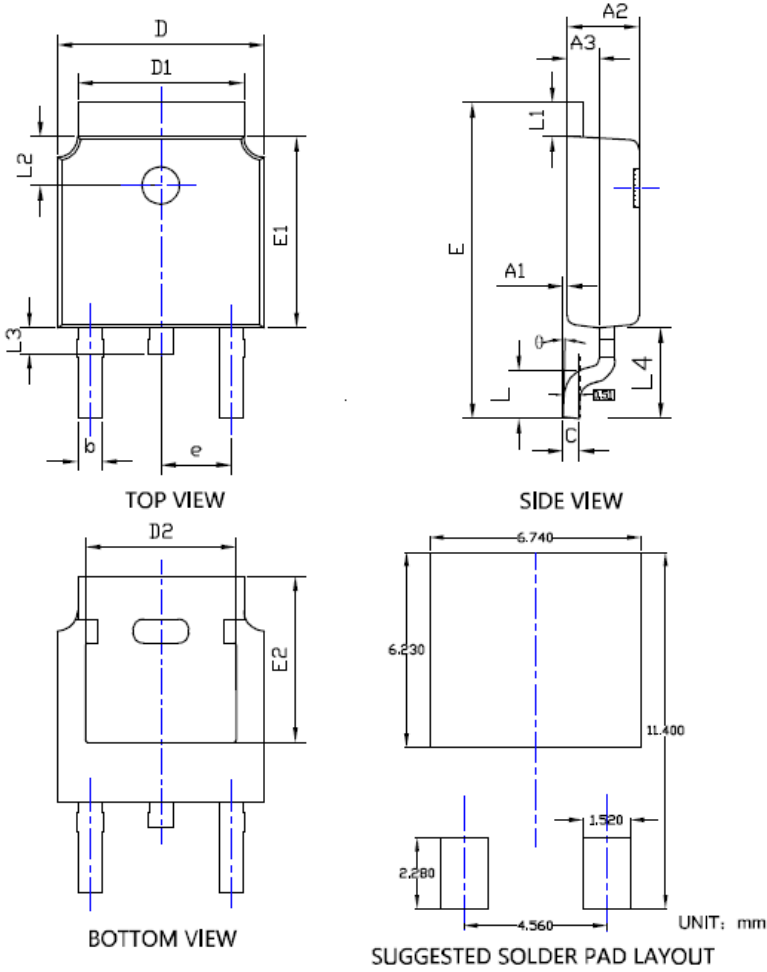


Figure9.Normalized Maximum Transient thermal impedance



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■ TO-252 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		
θ	0°	---	10°	0°	---	10°



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