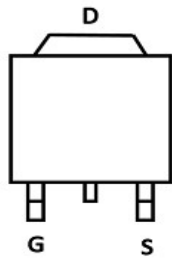
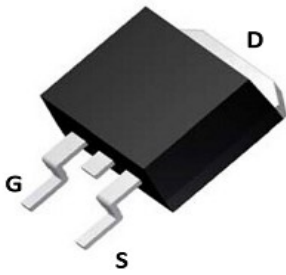
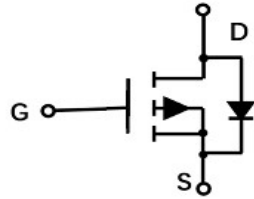


P-Channel Enhancement Mode Field Effect Transistor



TO-263



Product Summary

- V_{DS} -100V
- I_D -30A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <56 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <62 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ\text{C}$	I_D	-30	A
	$T_C=100^\circ\text{C}$		-19.2	
Pulsed Drain Current ^A		I_{DM}	-120	A
Avalanche energy ^B		E_{AS}	162	mJ
Total Power Dissipation ^C	$T_C=25^\circ\text{C}$	P_D	125	W
	$T_C=100^\circ\text{C}$		50	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10\text{S}$	$R_{\theta JA}$	12	15	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		50	60	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.8	1.0	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJB30GP10A	F2	YJB30GP10A	800	/	8000	13" reel



YJB30GP10A

■ 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	-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V	T _J =25°C		-1	μA
			T _J =55°C		-5	
			T _J =125°C		-10	
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	-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A		42	56	mΩ
		V _{GS} =-4.5V, I _D =-7A		46	62	
Diode Forward Voltage	V _{SD}	I _S =-15A, V _{GS} =0V			-1.3	V
Maximum Body-Diode Continuous Current	I _S				-30	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V, f=1MHZ		2100		pF
Output Capacitance	C _{oss}			236		
Reverse Transfer Capacitance	C _{rss}			48		
Switching Parameters						
Total Gate Charge	Q _{g(-10V)}	V _{GS} =-10V, V _{DS} =-50V, I _D =-5A		40		nC
Total Gate Charge	Q _{g(-4.5V)}			19.4		
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			8.6		
Reverse Recovery Charge	Q _{rr}	I _F =-5A, di/dt=100A/us		280		
Reverse Recovery Time	t _{rr}			104		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-50V, I _{DS} =-5A R _{GEN} =6Ω		13		ns
Turn-on Rise Time	t _r			39		
Turn-off Delay Time	t _{D(off)}			100.1		
Turn-off fall Time	t _f			105.3		

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

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

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

D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25° C. The Power dissipation PDSM is based on RθJA ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

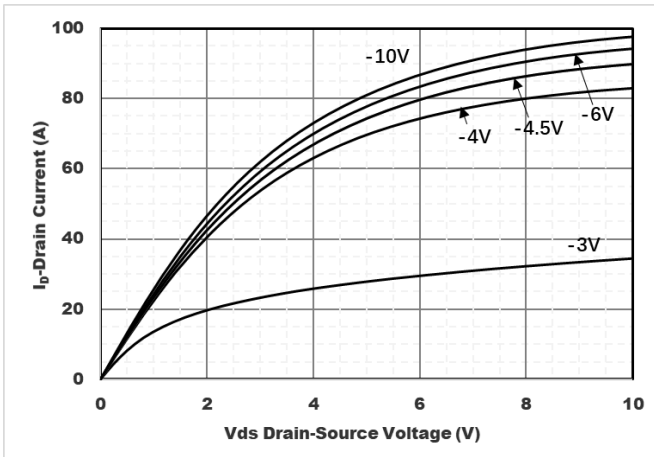


Figure1. Output Characteristics

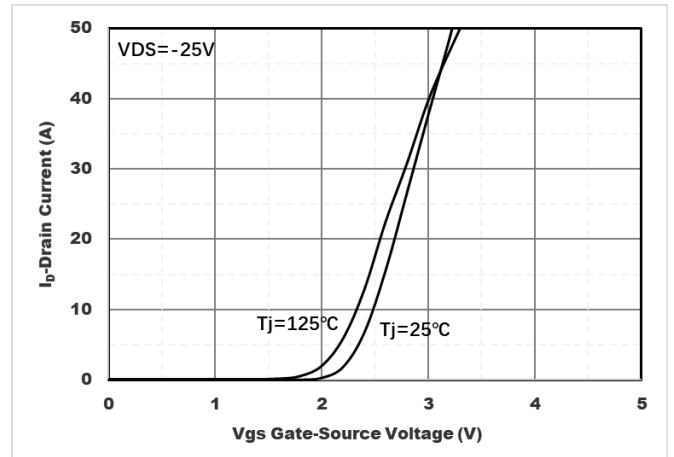


Figure2. Transfer Characteristics

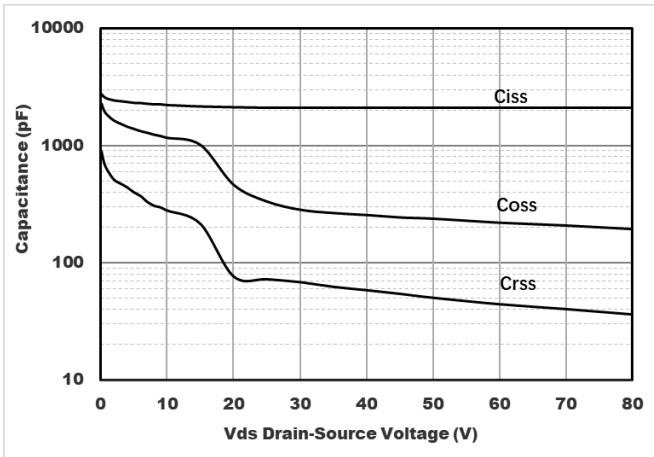


Figure3. Capacitance Characteristics

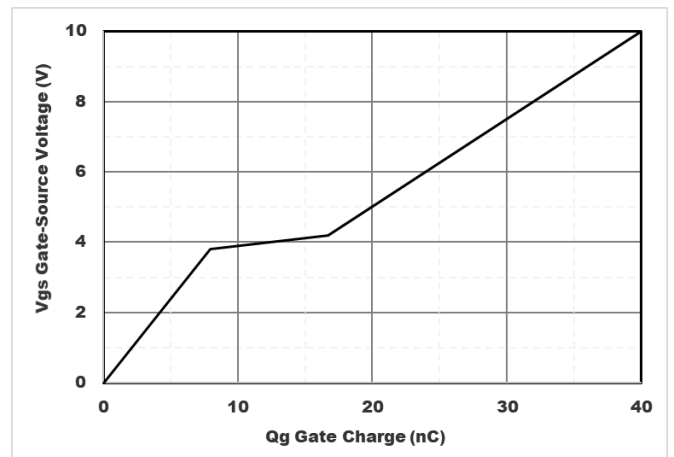


Figure4. Gate Charge

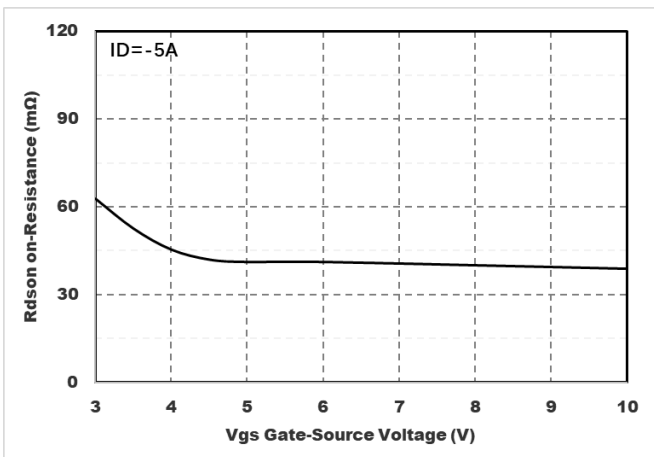


Figure5. : On-Resistance vs. Gate to Source Voltage

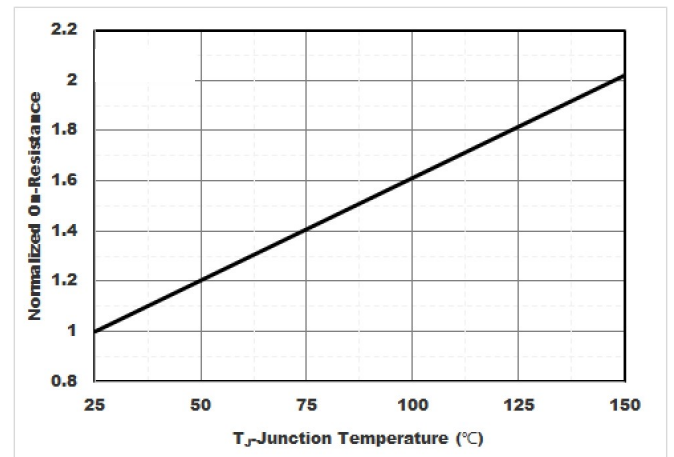


Figure6. Normalized On-Resistance



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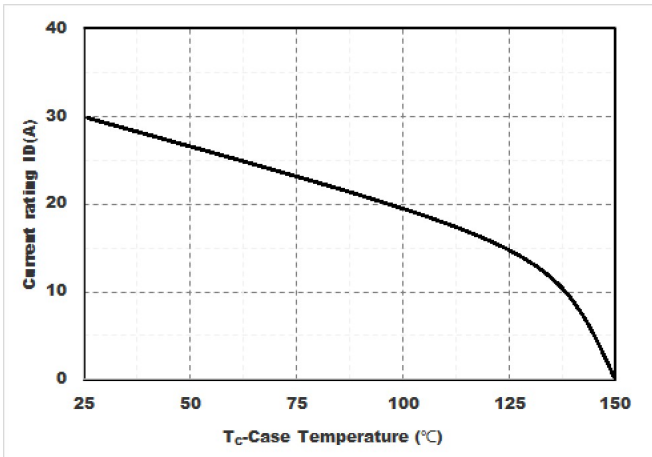


Figure7. Drain current

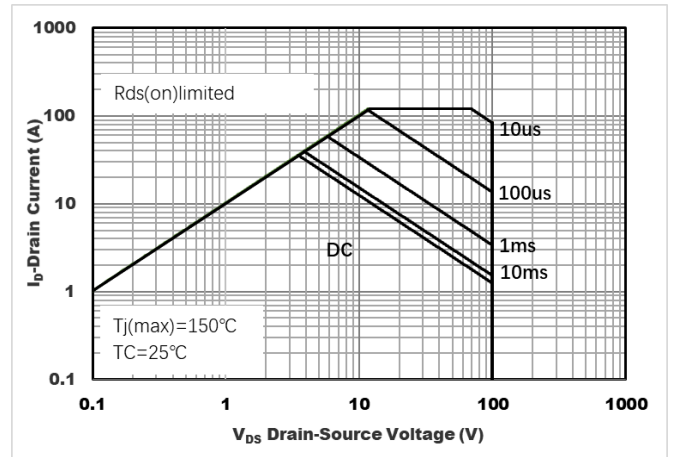


Figure8.Safe Operation Area

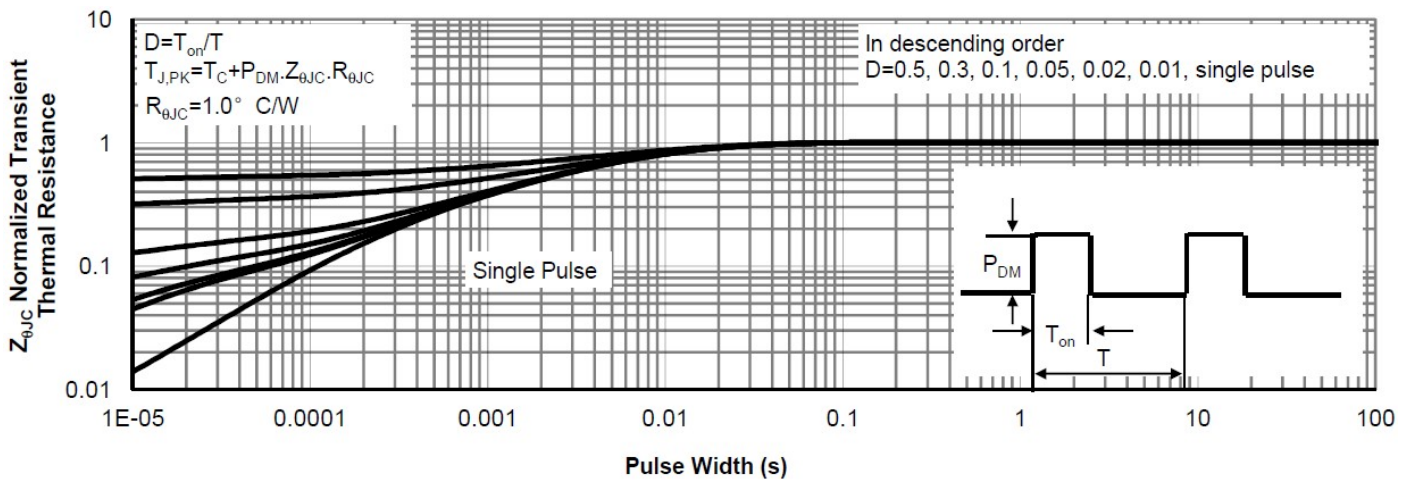
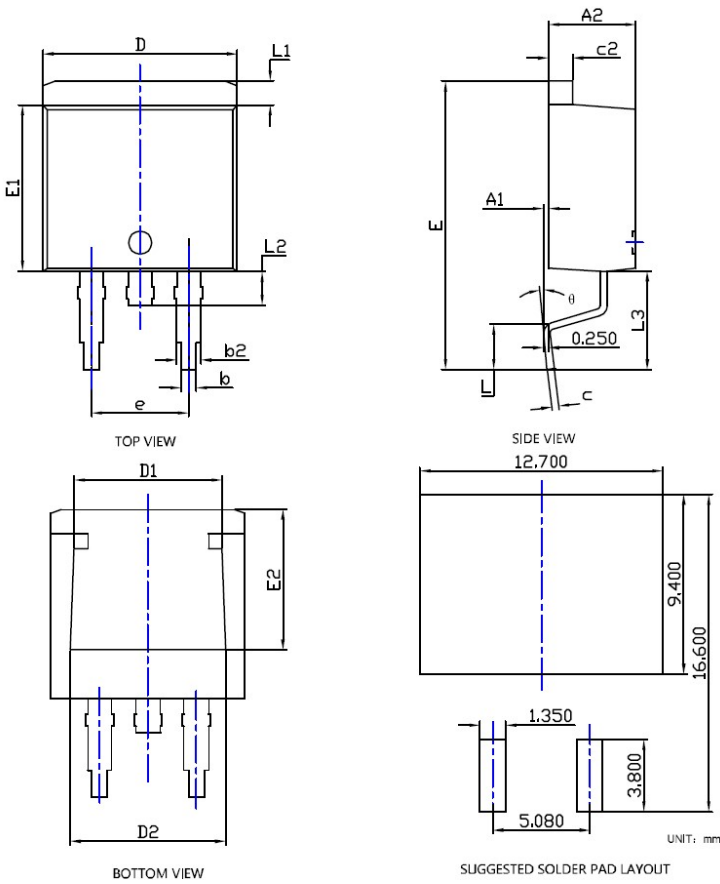


Figure9.Normalized Maximum Transient thermal impedance



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■ TO-263 Package information



SYMBOL	DIMENSIONS					
	INCHES			MILLimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.010	0.000	---	0.250
A2	0.174	0.180	0.186	4.430	4.580	4.730
b	0.028	0.032	0.036	0.720	0.820	0.920
b ₂	0.046	0.050	0.054	1.180	1.280	1.380
c	0.013	0.015	0.018	0.330	0.390	0.450
c ₂	0.048	0.050	0.053	1.220	1.280	1.34
D	0.394	0.400	0.406	10.000	10.150	10.300
D ₁	0.295	0.307	0.319	7.500	7.800	8.100
D ₂	0.303	0.315	0.327	7.700	8.000	8.300
E	0.571	0.591	0.610	14.500	15.000	15.500
E ₁	0.337	0.341	0.348	8.550	8.700	8.850
E ₂	0.276	0.287	0.299	7.000	7.300	7.600
e	0.200BSC			5.080BSC		
L	0.070	---	0.110	1.790	---	2.790
L ₁	0.044	---	0.056	1.120	---	1.420
L ₂	0.030	---	0.070	0.770	---	1.770
L ₃	0.197REF			5.000REF		
θ	0°	---	8°	0°	---	8°

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.



YJB30GP10A

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