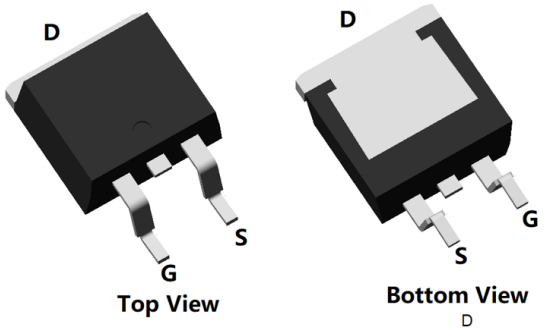
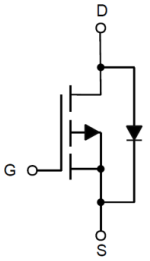
P-Channel Enhancement Mode Field Effect Transistor



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% EAS Tested
- 100% ▽V_{DS} Tested
- ESD Level (HBM) H1C

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

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

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	t≤10S	$R_{\theta JA}$	12	15	℃/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)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
B30GP10A	F2	B30GP10A	800	/	8000	13“ reel

■ 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=-250μA		-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V,V_{GS}=0V	T_J=25℃			-1	μA
			T_J=55℃			-5	
			T_J=125℃			-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 Chrage	Q_{rr}	I_F=-5A, di/dt=100A/us			280		
Reverse Recovery Time	t_{rr}				104		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DD}=-50V,I_{DS}=-5A R_{GEN}=6Ω			13		
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 t≤ 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

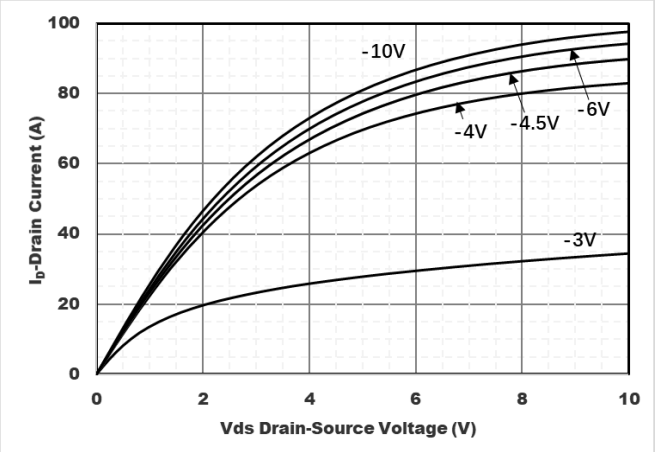


Figure1. Output Characteristics

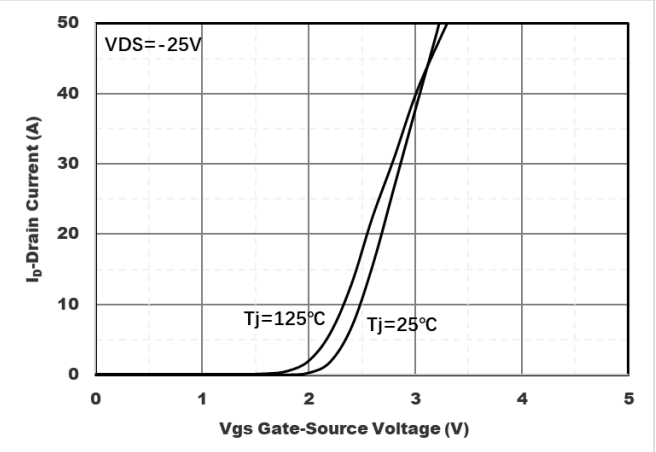


Figure2. Transfer Characteristics

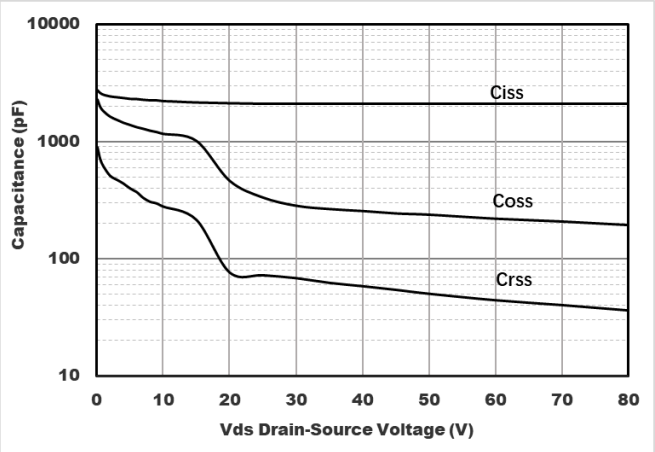


Figure3. Capacitance Characteristics

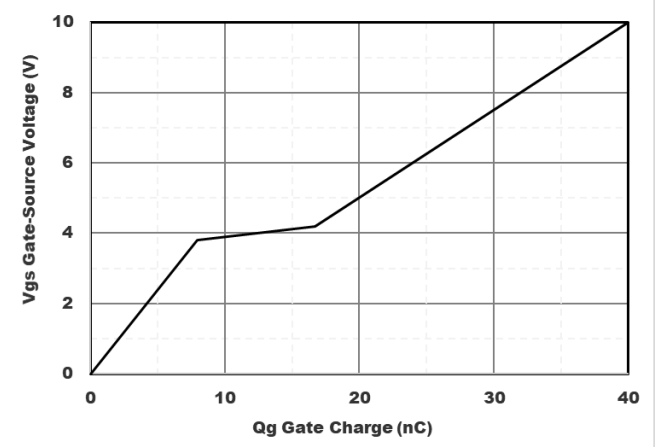


Figure4. Gate Charge

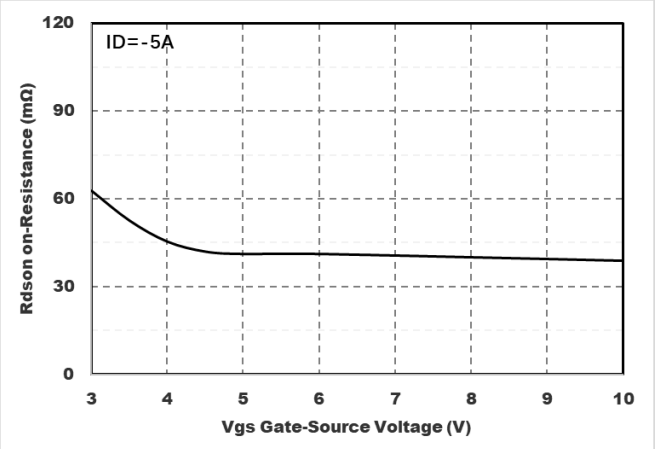


Figure5. : On-Resistance vs. Gate to Source Voltage

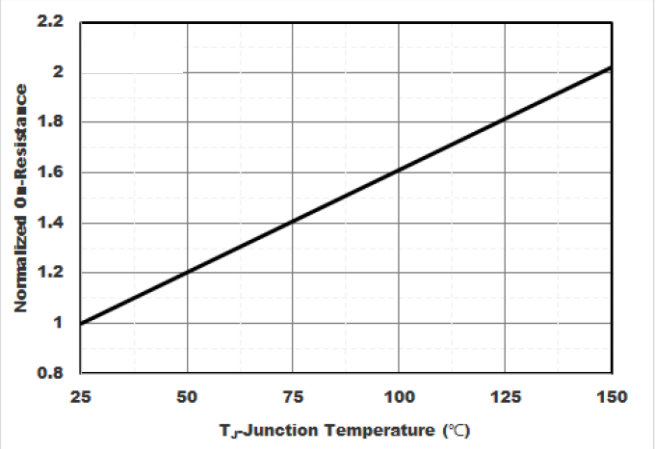


Figure6.Normalized On-Resistance

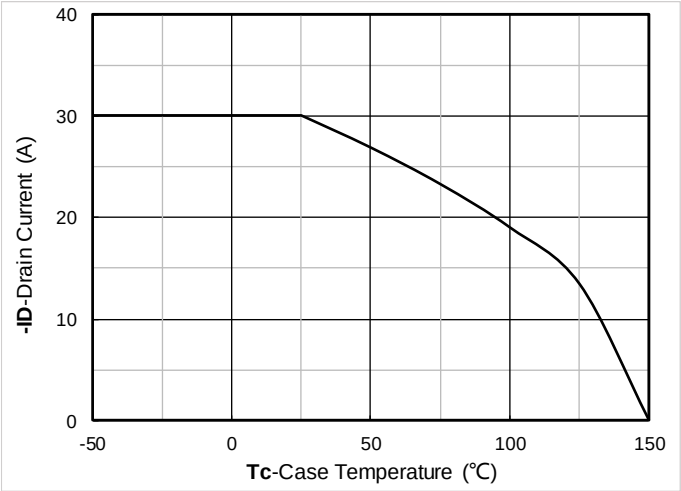


Figure7. Drain current

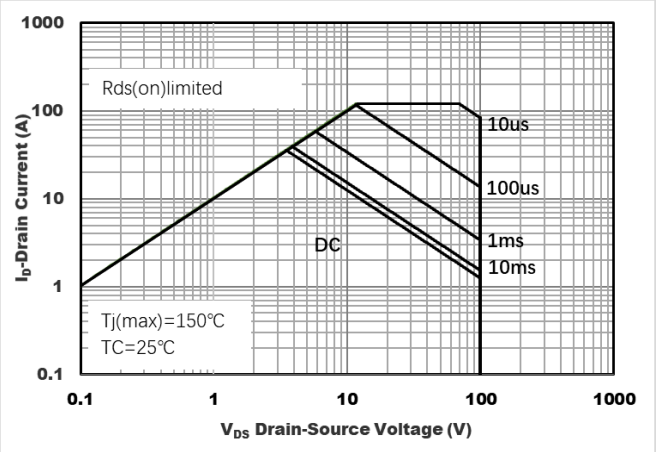


Figure8.Safe Operation Area

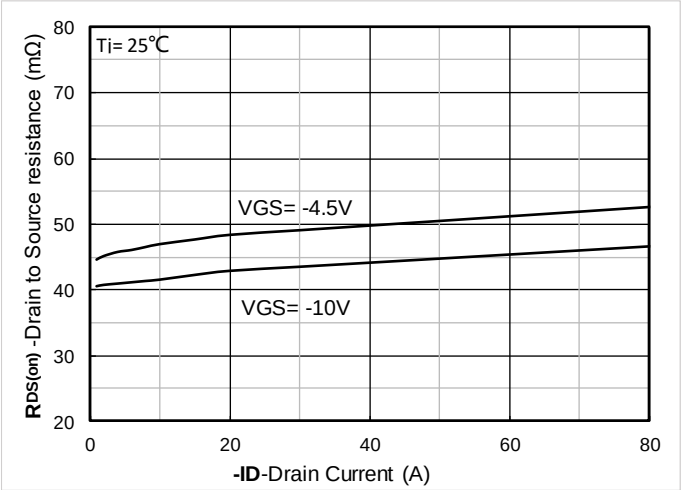


Figure9. $R_{DS(on)}$ VS Drain Current

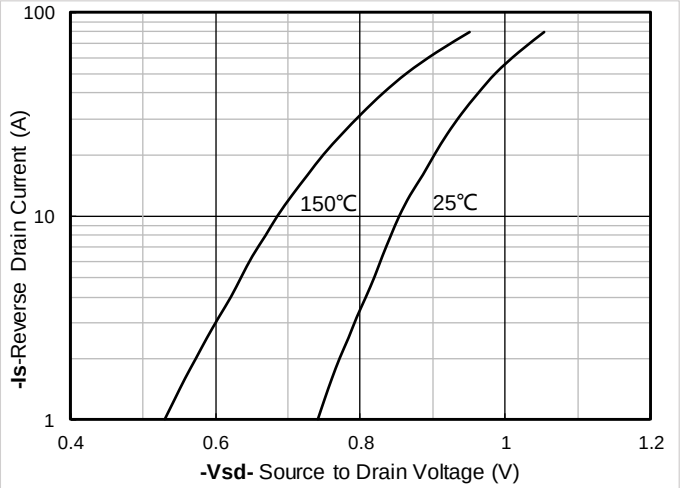


Figure 10. Forward characteristics of reverse diode

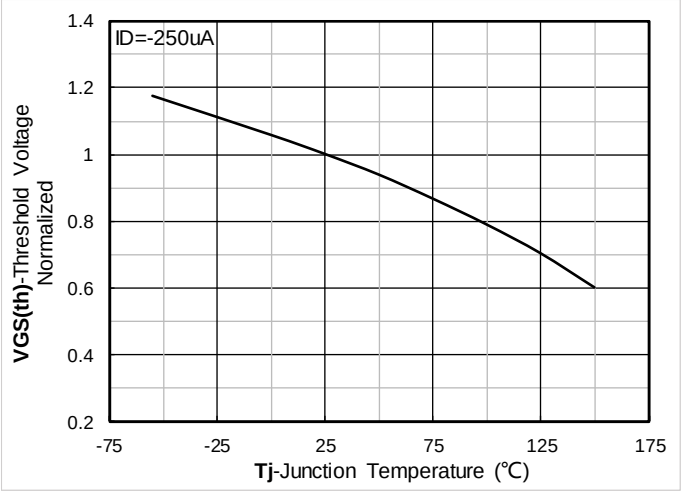


Figure 11. Normalized Threshold voltage

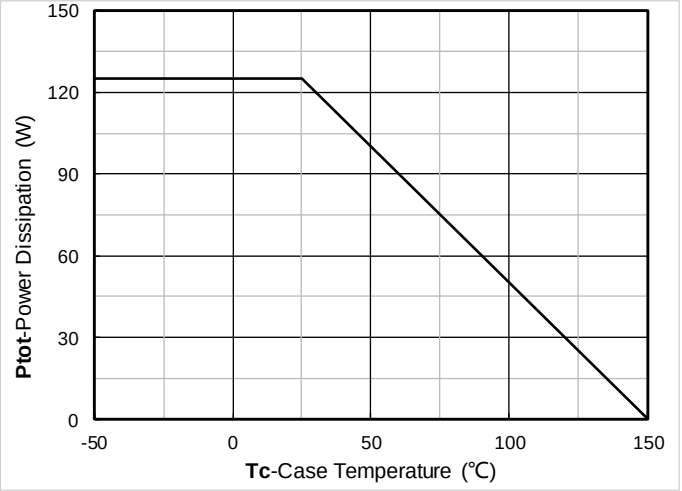


Figure 12. Power dissipation

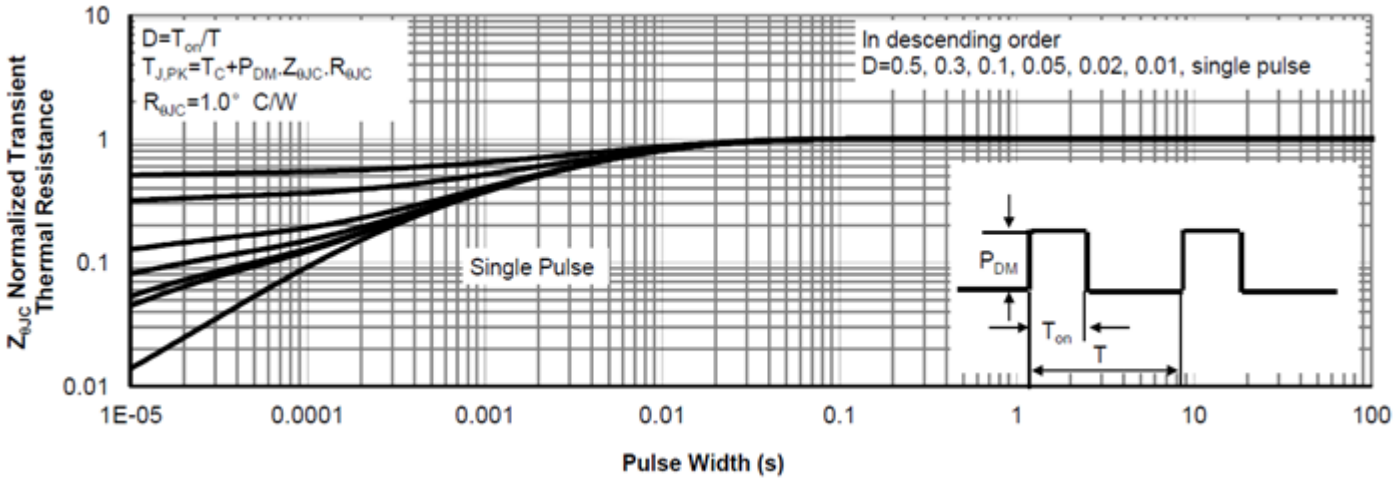
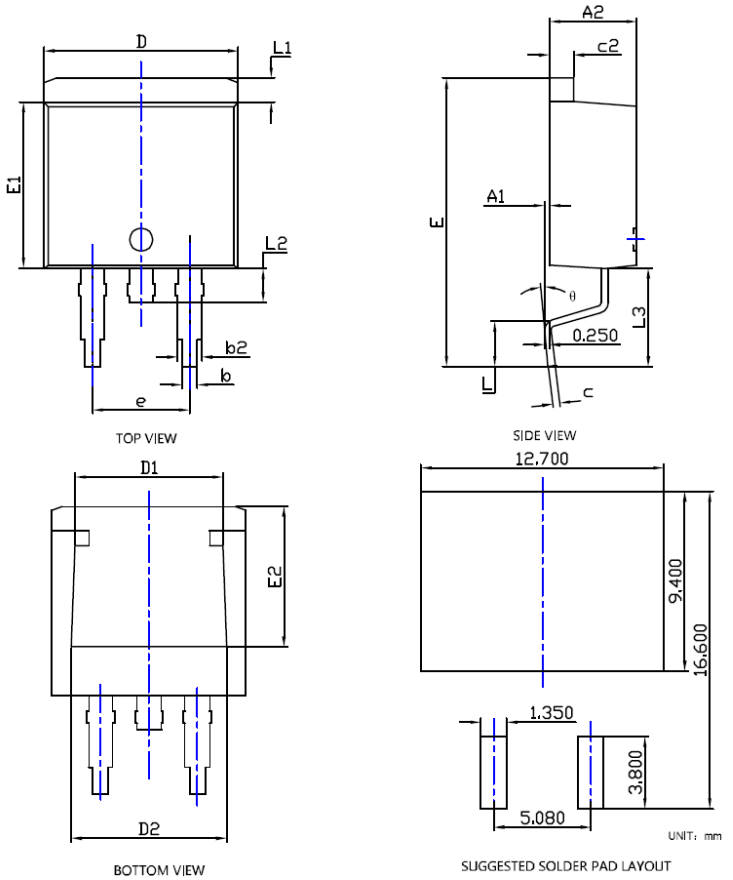


Figure13.Normalized Maximum Transient thermal impedance

■ TO-263 Package information



SYMBOL	DIMENSIONS					
	INCHES			Millmeter		
	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
b2	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
c2	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
D1	0.295	0.307	0.319	7.500	7.800	8.100
D2	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
E1	0.337	0.341	0.348	8.550	8.700	8.850
E2	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
L1	0.044	---	0.056	1.120	---	1.420
L2	0.030	---	0.070	0.770	---	1.770
L3	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.

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