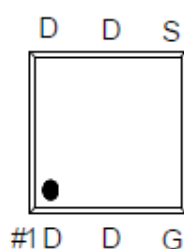


P1603BEB

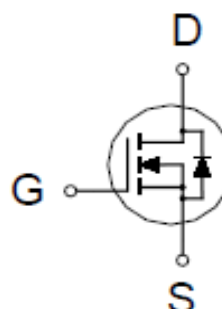
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D^3
30V	16m Ω @ $V_{GS} = 10V$	21A



PDFN 2X2S



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ³	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	21	A
	$T_C = 100\text{ }^{\circ}\text{C}$		17	
	$T_A = 25\text{ }^{\circ}\text{C}$		8	
	$T_A = 70\text{ }^{\circ}\text{C}$		6	
Pulsed Drain Current ¹		I_{DM}	60	
Avalanche Current		I_{AS}	18	
Avalanche Energy	$L = 0.1\text{ mH}$	E_{AS}	16	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	16	W
	$T_C = 100\text{ }^{\circ}\text{C}$		10	
	$T_A = 25\text{ }^{\circ}\text{C}$		2	
	$T_A = 70\text{ }^{\circ}\text{C}$		1.2	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ²	$R_{\theta JA}$		65	$^{\circ}\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		7.6	

¹Pulse width limited by maximum junction temperature.

²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Coppe.

³Package limitation current is 12A.

P1603BEB

N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.7	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} = 0V			1	μA
		V _{DS} =20V, V _{GS} = 0V, T _J = 125°C			10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	55			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 5A		22	25	mΩ
		V _{GS} =10V, I _D = 7A		13	16	
Forward Transconductance ¹	g _{fs}	V _{DS} =10V, I _D = 7A		35		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		560		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			75		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge ²	Q _{g(VGS=10V)}	V _{DS} = 0.5V _{(BR)DSS} , I _D = 7A		12		nC
	Q _{g(VGS=4.5V)}			6		
Gate-Source Charge ²	Q _{gs}			2.1		
Gate-Drain Charge ²	Q _{gd}			3.5		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 15V I _D ≅ 7A, V _{GEN} = 10V, R _G = 6Ω		7		nS
Rise Time ²	t _r			29		
Turn-Off Delay Time ²	t _{d(off)}			45		
Fall Time ²	t _f			18		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ³	I _S				21	A
Forward Voltage ¹	V _{SD}	I _F = 7A, V _{GS} = 0V			1	V
Reverse Recovery Time	t _{rr}	I _F = 7A, dI _F /dt = 100A / μS		24		nS
Reverse Recovery Charge	Q _{rr}			29		nC

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

³Package limitation current is 12A.

P1603BEB

N-Channel Enhancement Mode MOSFET

Package Dimension

PDFN 2x2S MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	1.9		2.1	I	0		0.05
B	1.9		2.1	J		0.203	
C	0.55	0.65	0.75	K	0.55		0.8
D	0.85		1.25	L	0.2		0.4
E	0.174	0.25	0.326	M	0.46		0.85
F	0.25		0.35	N		0.15	
G		0.2		O		0.23	
H	0.8		1.15				

