

**GU08P20****P-CHANNEL ENHANCEMENT MODE POWER MOSFET**

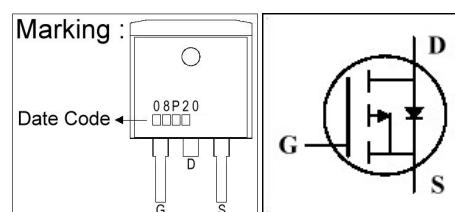
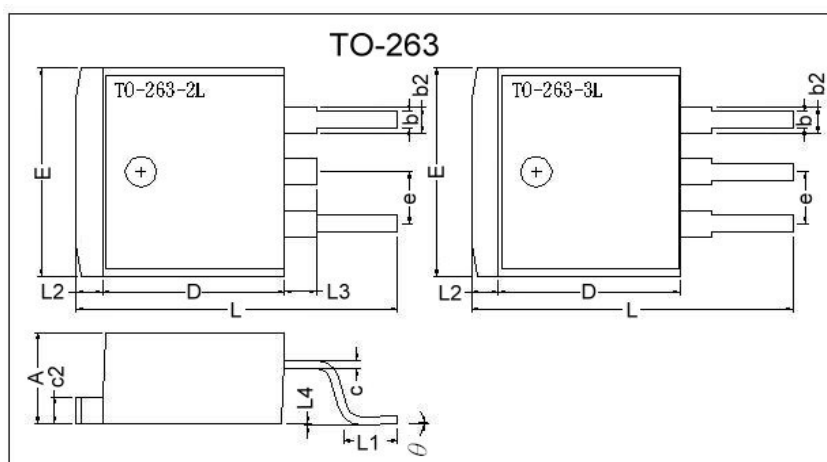
BVDSS	-200V
RDS(ON)	680mΩ
ID	-8A

**Description**

The GU08P20 (TO-263 package) is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

**Features**

- \*Simple Drive Requirement
- \*Lower On-resistance
- \*Fast Switching Characteristic
- \*RoHS Compliant

**Package Dimensions**

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
L4	0.00	0.30	D	8.6	9.0
c	0.36	0.5	e	2.54 REF.	
L3	1.50 REF.		L	14.6	15.8
L1	2.29	2.79	θ	0°	8°
E	9.80	10.4	L2	1.27 REF.	

**Absolute Maximum Ratings**

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-200	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current, $V_{GS}@10V$	$I_D @ T_C=25^\circ C$	-8	A
Continuous Drain Current, $V_{GS}@10V$	$I_D @ T_C=100^\circ C$	-5	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-30	A
Total Power Dissipation	$P_D @ T_C=25^\circ C$	96	W
Linear Derating Factor		0.77	W/ $^\circ C$
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ +150	$^\circ C$

**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case	$R_{thj-c}$	1.3	$^\circ C/W$
Thermal Resistance Junction-ambient	$R_{thj-a}$	62	$^\circ C/W$

**Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-200	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =-250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.03	-	V/°C	Reference to 25°C, I <sub>D</sub> =-1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	-2.0	-	-4.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA
Forward Transconductance	g <sub>fs</sub>	-	4	-	S	V <sub>DS</sub> =-10V, I <sub>D</sub> =-5A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	-25	uA	V <sub>DS</sub> =-200V, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =150°C)		-	-	-100	uA	V <sub>DS</sub> =-160V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	-	-	680	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	20	32	nC	I <sub>D</sub> =-5A V <sub>DS</sub> =-160V V <sub>GS</sub> =-4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	5	-		
Gate-Drain ("Miller") Change	Q <sub>gd</sub>	-	13	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(on)</sub>	-	12	-	ns	V <sub>DS</sub> =-100V I <sub>D</sub> =-5A V <sub>GS</sub> =-10V R <sub>G</sub> =10Ω R <sub>D</sub> =20Ω
Rise Time	T <sub>r</sub>	-	14	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	64	-		
Fall Time	T <sub>f</sub>	-	28	-		
Input Capacitance	C <sub>iss</sub>	-	1210	-	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =-25V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	170	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	45	-		
Gate Resistance	R <sub>g</sub>	-	3.6	5.4	Ω	f=1.0MHz

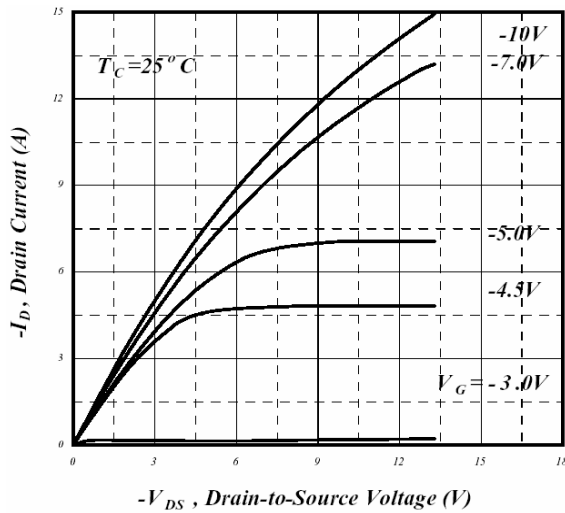
**Source-Drain Diode**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	-1.3	V	I <sub>S</sub> =-5A, V <sub>GS</sub> =0V
Reverse Recovery Time <sup>2</sup>	T <sub>rr</sub>	-	165	-	ns	I <sub>S</sub> =-5A, V <sub>GS</sub> =0V di/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	1420	-	nC	

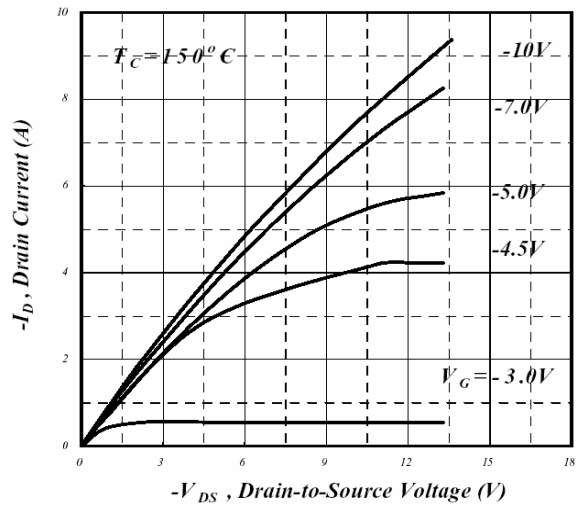
Notes: 1. Pulse width limited by safe operating area.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

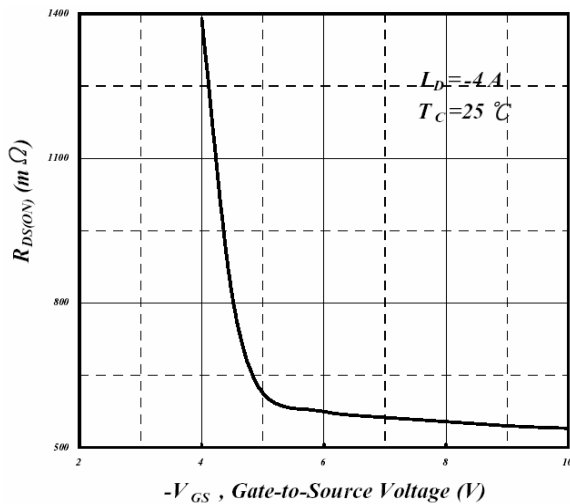
## Characteristics Curve



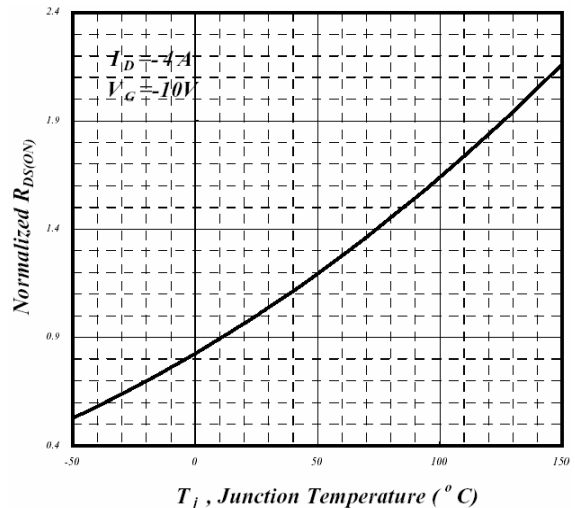
**Fig 1. Typical Output Characteristics**



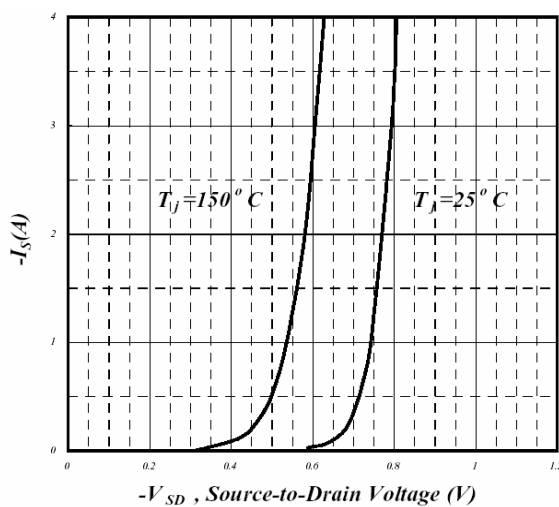
**Fig 2. Typical Output Characteristics**



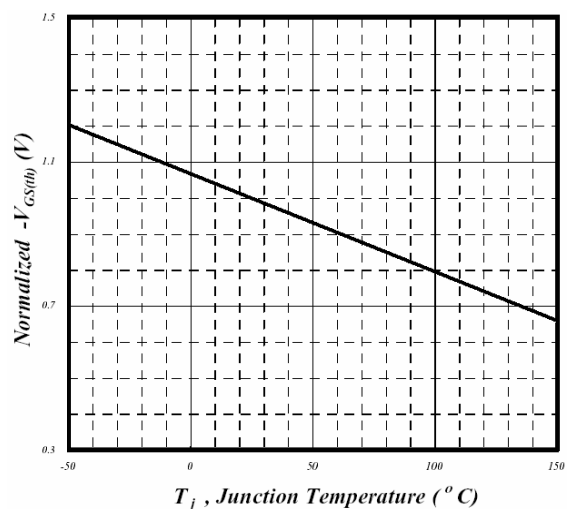
**Fig 3. On-Resistance v.s. Gate Voltage**



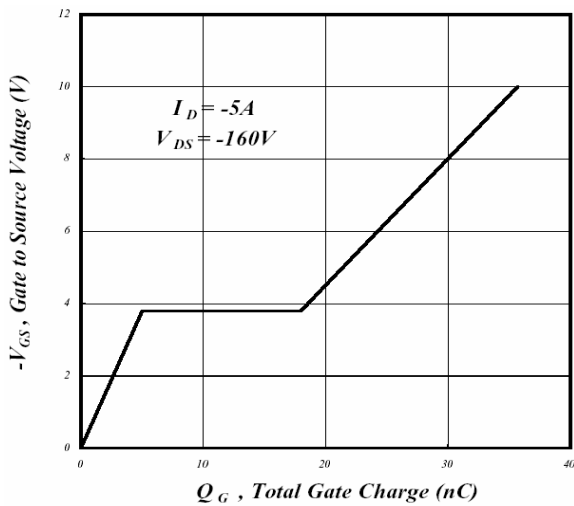
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



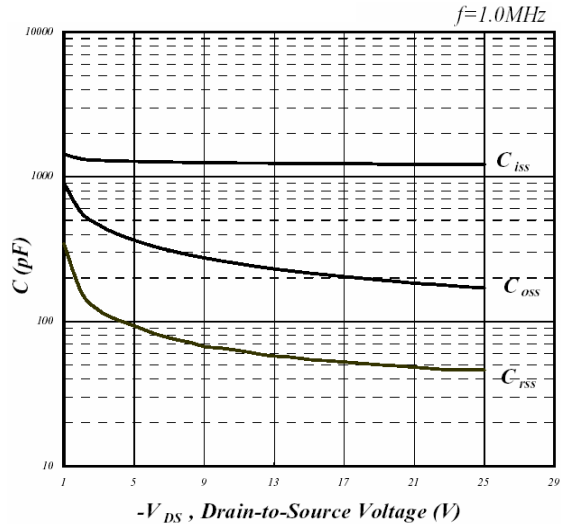
**Fig 5. Forward Characteristics of Reverse Diode**



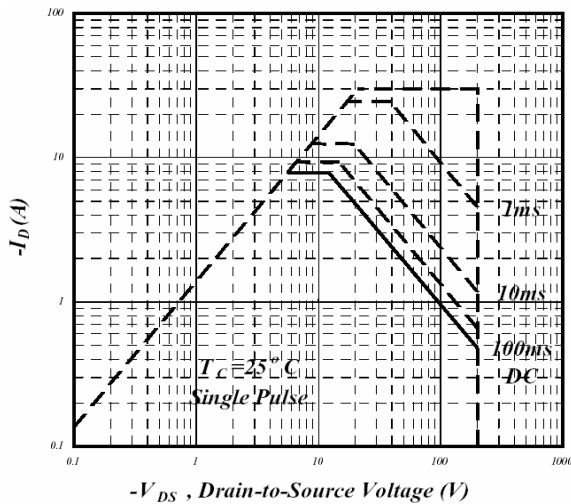
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



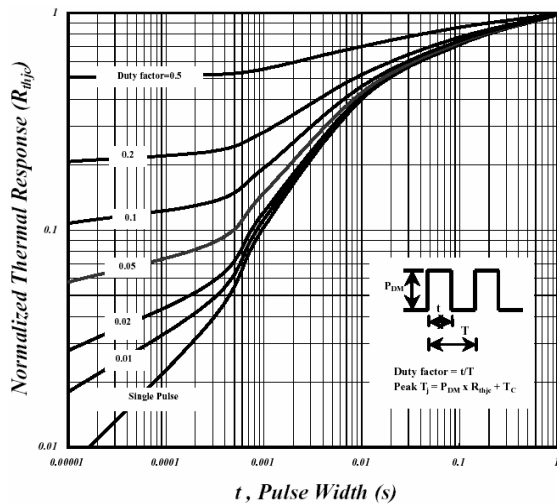
**Fig 7. Gate Charge Characteristics**



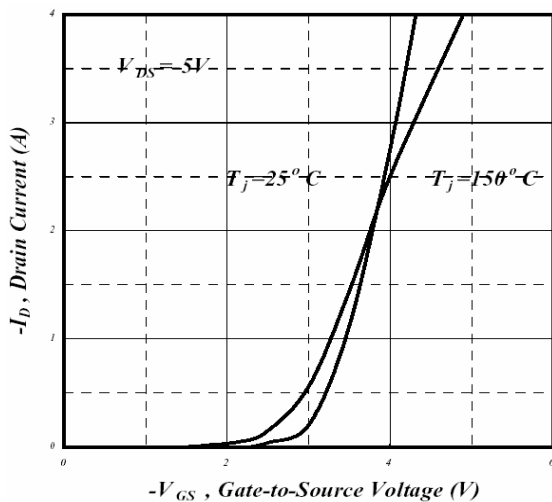
**Fig 8. Typical Capacitance Characteristics**



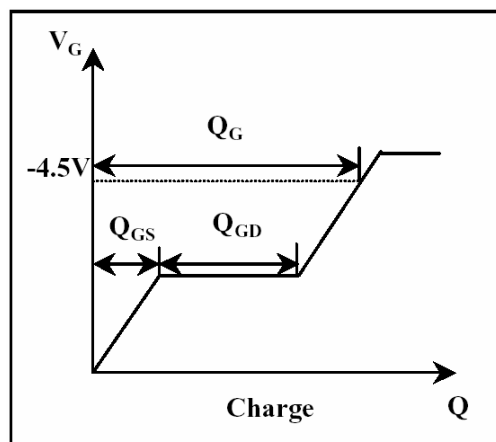
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Transfer Characteristics**



**Fig 12. Gate Charge Waveform**

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**Head Office And Factory:**  
 • **Taiwan:** No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.  
 TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785  
 • **China:** (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China  
 TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165