

PA210BC

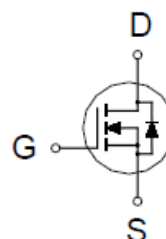
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	120m Ω @ $V_{GS} = 10V$	3A



SOT-89



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	3	A
	$T_A = 70\text{ }^{\circ}\text{C}$		1.9	
Pulsed Drain Current ¹		I_{DM}	26	
Avalanche Current		I_{AS}	26	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	34	mJ
Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	2	W
	$T_A = 70\text{ }^{\circ}\text{C}$		0.8	
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	$R_{\theta JA}$		60	$^{\circ}\text{C} / \text{W}$

¹Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	2	3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V			1	μA
		V _{DS} = 80V, V _{GS} = 0V , T _J = 125 °C			10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 10V	26			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 3A		104	130	mΩ
		V _{GS} = 10V, I _D = 3A		94	120	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 3A		10		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		1410		pF
Output Capacitance	C _{oss}			114		
Reverse Transfer Capacitance	C _{rss}			58		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.3		Ω
Total Gate Charge ²	Q _g	V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 3A		29		nC
Gate-Source Charge ²	Q _{gs}			5		
Gate-Drain Charge ²	Q _{gd}			9		
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = 50V, I _D ≅ 3A, V _{GS} = 10V, R _{GS} = 6Ω		18		nS
Rise Time ²	t _r			4.5		
Turn-Off Delay Time ²	t _{d(off)}			3		
Fall Time ²	t _f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current	I _S				3	A
Forward Voltage ¹	V _{SD}	I _F = 3A, V _{GS} = 0V			1.4	V
Reverse Recovery Time	t _{rr}	I _F = 3A, dI _F /dt = 100A / μS		47		nS
Reverse Recovery Charge	Q _{rr}			76		nC

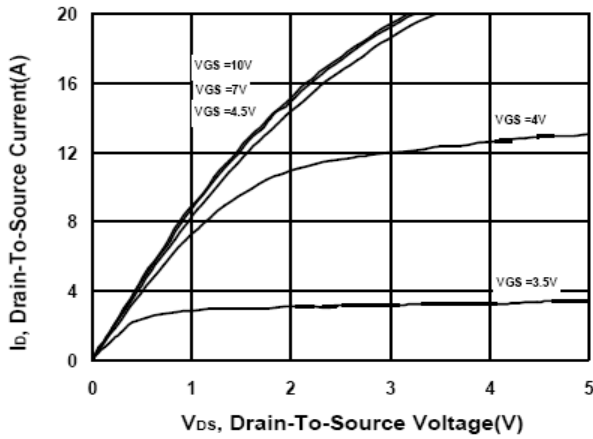
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

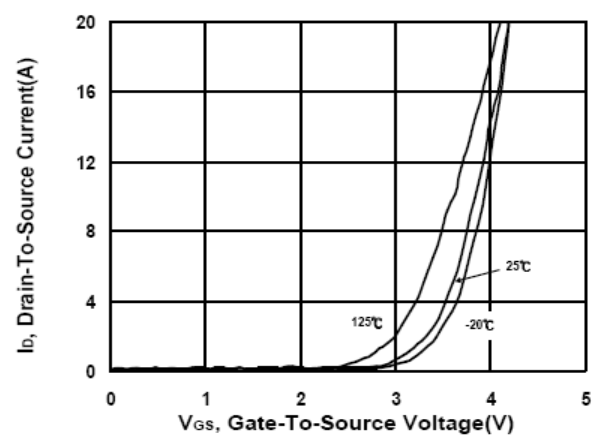
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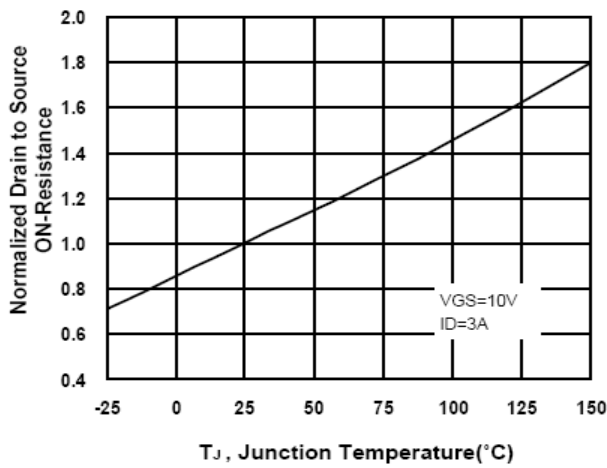
Output Characteristics



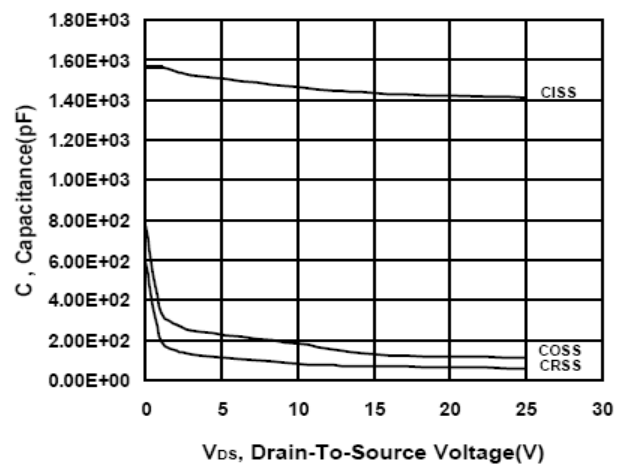
Transfer Characteristics



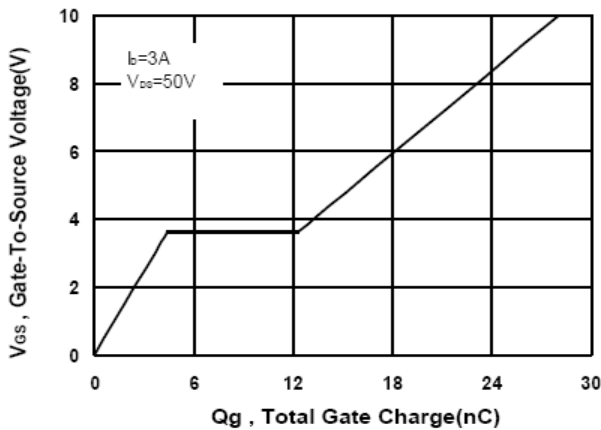
On-Resistance VS Temperature



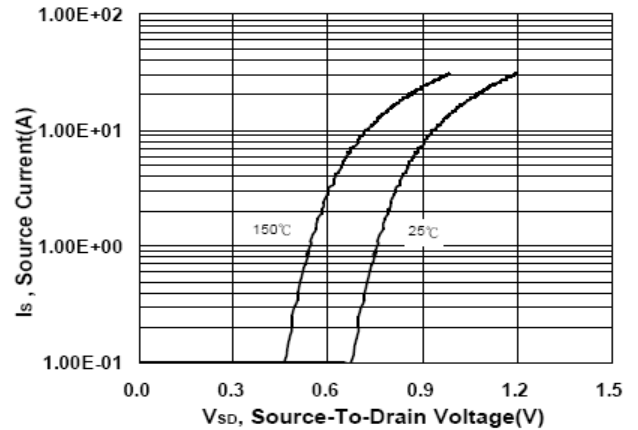
Capacitance Characteristic



Gate charge Characteristics



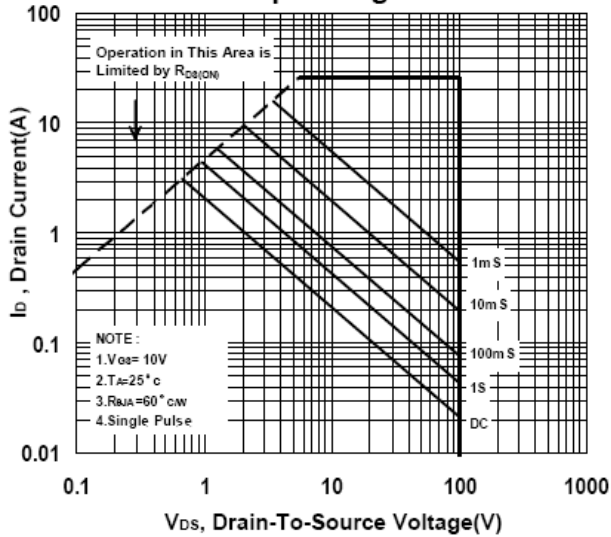
Source-Drain Diode Forward Voltage



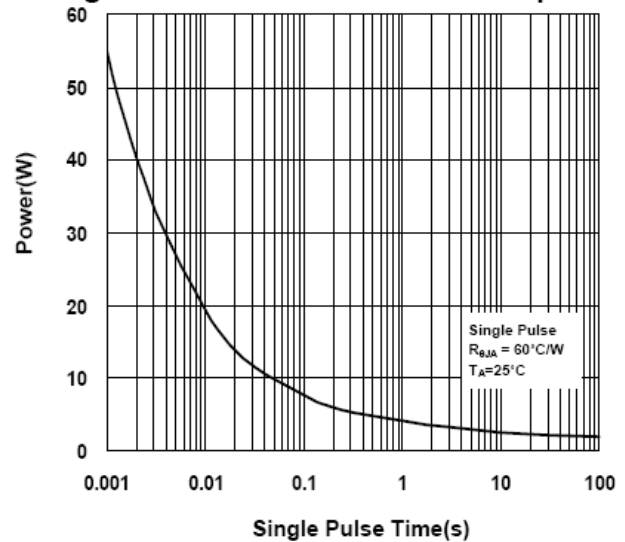
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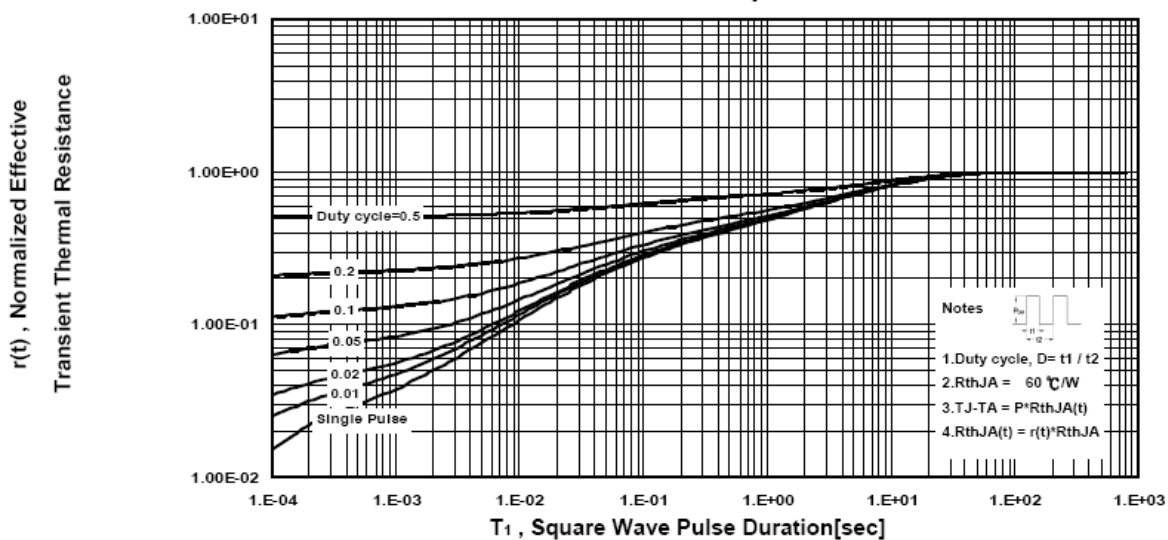
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

SOT-89 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.45	4.5	4.55	G	0.36	0.50	0.56
B	1.4	1.7	1.8	H	1.3	1.5	1.7
C	0	0.7	1.05	I	2.8	3.0	3.2
D	2.3	2.5	2.6	J	1.4	1.5	1.6
E	0.8	1.04	1.2	K	3.8	4.2	4.25
F	0.3	0.46	0.52	L	0.35	0.4	0.44

