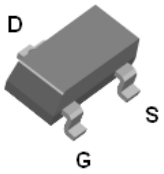
UNIKC Semiconductor

P8503BMA

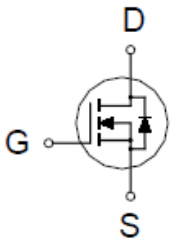
N-Channel Logic Level Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	85mΩ @V_{GS} = 10V	2.4A



SOT-23(S)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	2.4	A
	T_A = 100 °C		1.5	
Pulsed Drain Current[1]		I_{DM}	10	
Avalanche Current		I_{AS}	12	
Avalanche Energy	L = 0.1mH	E_{AS}	7	mJ
Power Dissipation	T_A = 25 °C	P_D	0.75	W
	T_A = 100 °C		0.3	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		166	°C / W

[1]Pulse width limited by maximum junction temperature.

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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	0.8	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	10			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 1.5A		72	115	mΩ
		V_{GS} = 10V, I_D = 3A		50	85	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15V, I_D = 3A		16		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		217		pF
Output Capacitance	C_{oss}			68		
Reverse Transfer Capacitance	C_{rss}			46		
Total Gate Charge[2]	$Q_{g(4.5V)}$	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 3A		3		nC
	$Q_{g(10V)}$			6.2		
Gate-Source Charge[2]	$Q_{gs(4.5V)}$			0.7		
	$Q_{gs(10V)}$			0.7		
Gate-Drain Charge[2]	$Q_{gd(4.5V)}$			1.5		
	$Q_{gd(10V)}$			2.1		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V, R_L = 1Ω I_D ≅ 3A, V_{GS} = 10V, R_{GS} = 2.5Ω		6		nS
Rise Time[2]	t_r			6		
Turn-Off Delay Time[2]	$t_{d(off)}$			20		
Fall Time[2]	t_f			5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE (T_J = 25 ˚C)						
Continuous Current	I_S				2.4	A
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.5	V

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

[2]Independent of operating temperature.

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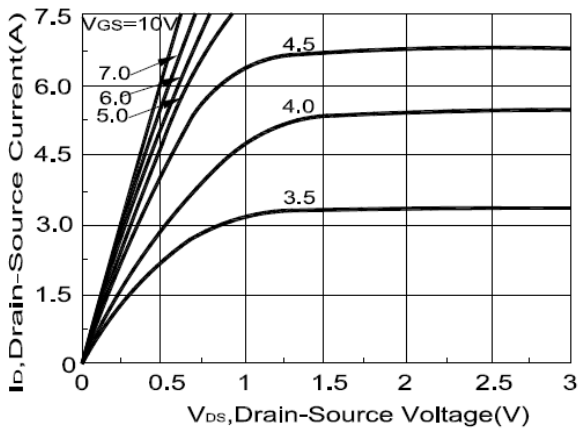
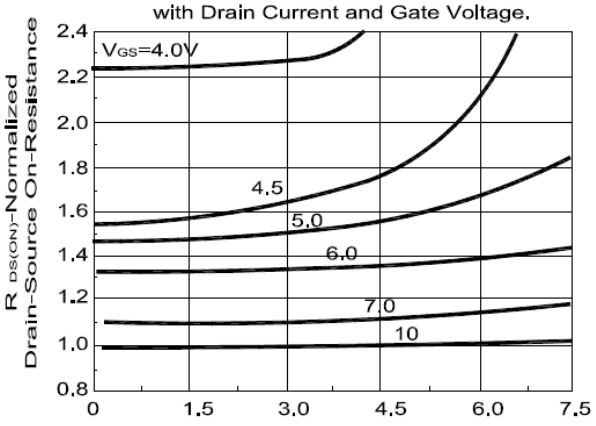
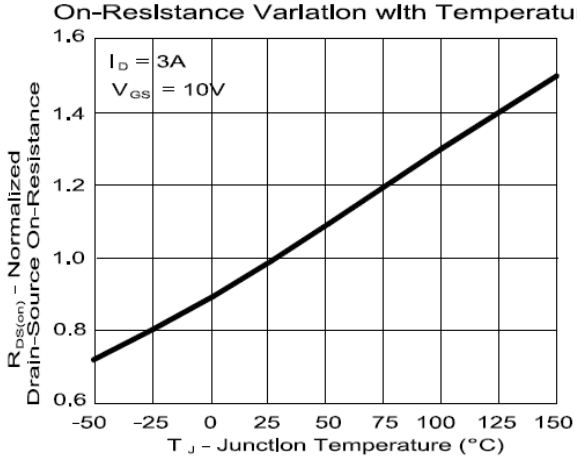
On-Region Characteristics.



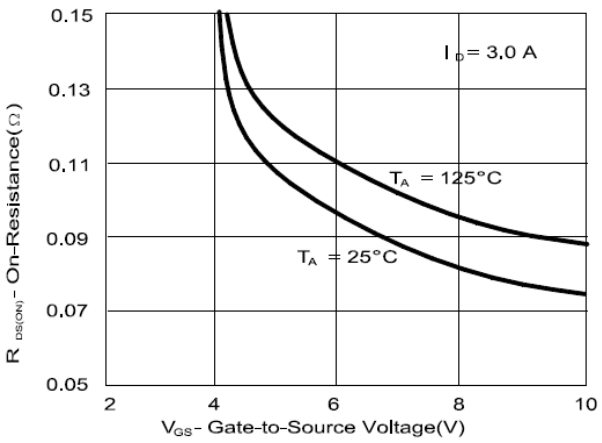
On-Resistance Variation with Drain Current and Gate Voltage.



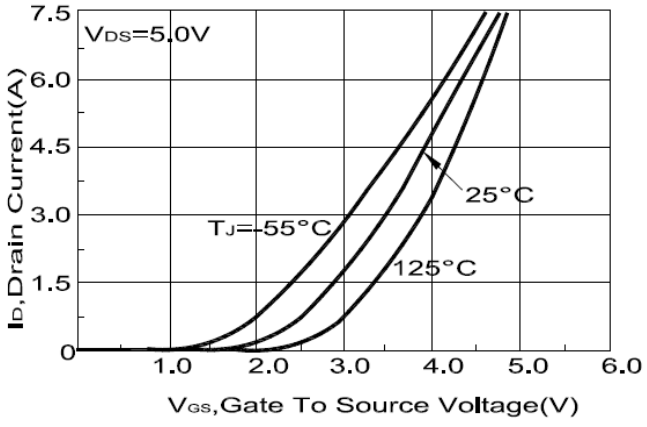
On-Resistance Variation with Temperature



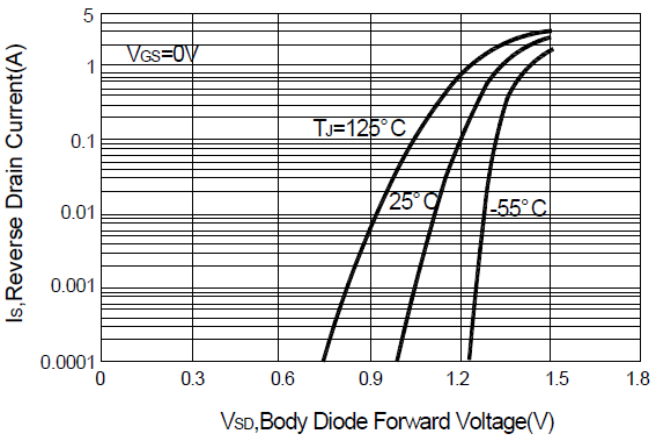
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics.



Body Diode Forward Voltage Variation with Source Current and Temperature.



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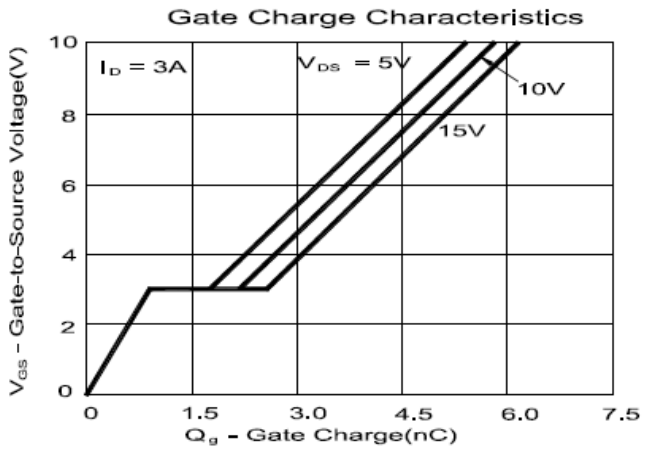

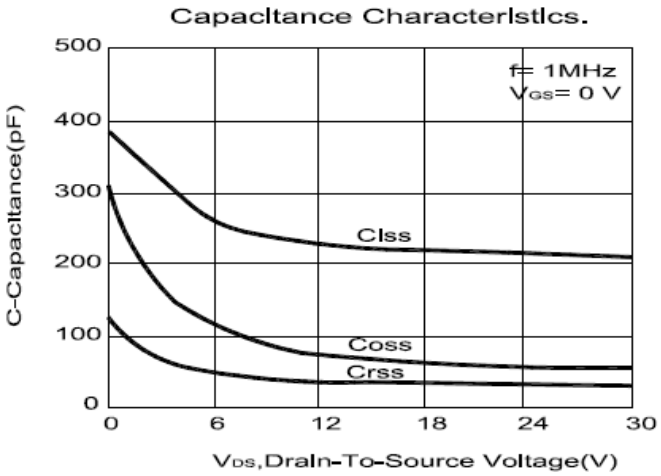

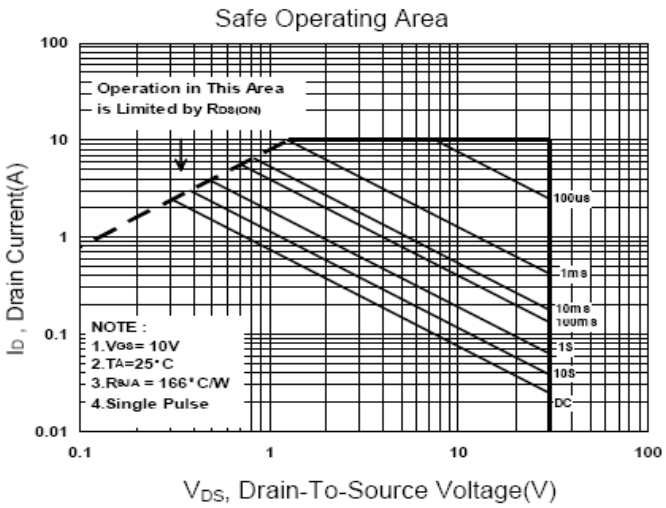

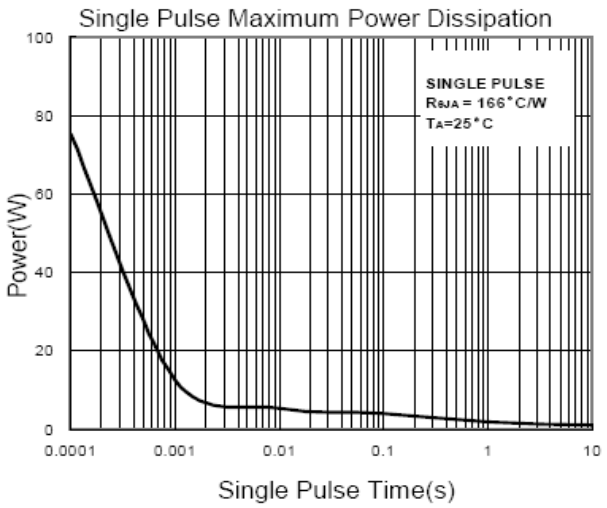

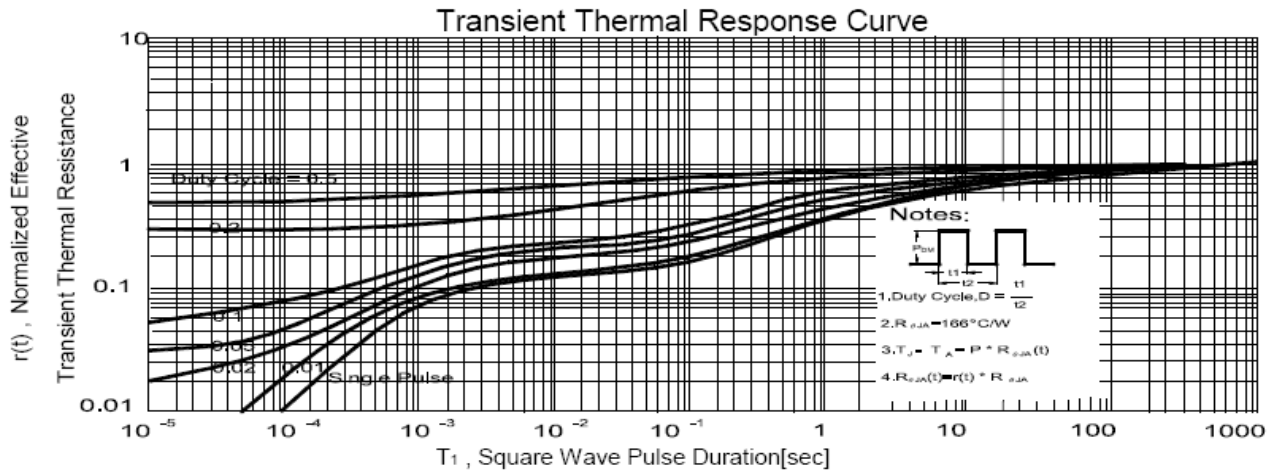

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Package Dimension

SOT-23 (S) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.9		1	H	0.08		0.2
B	2.25		2.85	I	0.15		0.6
C	1.2		1.4				
D	2.8		3.04				
E	0.89		1.2				
F	0		0.1				
G	0.3		0.5