UNIKC Semiconductor

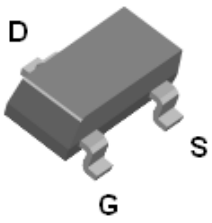
RoHS Compliant

P6403FMG

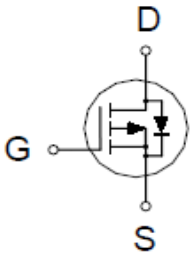
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	64mΩ @V_{GS} = -4.5V	-3A



SOT-23



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_A = 25 °C	I_D	-3	A
	T_A = 70 °C		-2.3	
Pulsed Drain Current[1]		I_{DM}	-20	
Avalanche Current		I_{AS}	-20	
Avalanche Energy	L = 0.1 mH	E_{AS}	20	mJ
Power Dissipation	T_A = 25 °C	P_D	1	W
	T_A = 70 °C		0.6	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$		130	°C / W

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

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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	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-0.8	-1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±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 = 70 °C			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -4.5V	-20			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -1.8V, I_D = -2A		85	130	mΩ
		V_{GS} = -2.5V, I_D = -3A		66	80	
		V_{GS} = -4.5V, I_D = -4A		53	64	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -4A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		1110		pF
Output Capacitance	C_{oss}			147		
Reverse Transfer Capacitance	C_{rss}			92		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		6.2		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -15V, I_D = -4A,V_{GS} = -4.5V		11.9		nC
Gate-Source Charge[2]	Q_{gs}			2.2		
Gate-Drain Charge[2]	Q_{gd}			4.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -15V I_D ≅ -4A, V_{GS} = -4.5V, R_{GEN} = 6Ω		45		nS
Rise Time[2]	t_r			135		
Turn-Off Delay Time[2]	$t_{d(off)}$			25		
Fall Time[2]	t_f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE (T_J = 25 ˚C)						
Continuous Current	I_S				-0.8	A
Forward Voltage[1]	V_{SD}	I_F = -4A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = -4A, dI_F/dt = 100 A / μs		13.8		nS
Reverse Recovery Charge	Q_{rr}			4		nC

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

[2]Independent of operating temperature.

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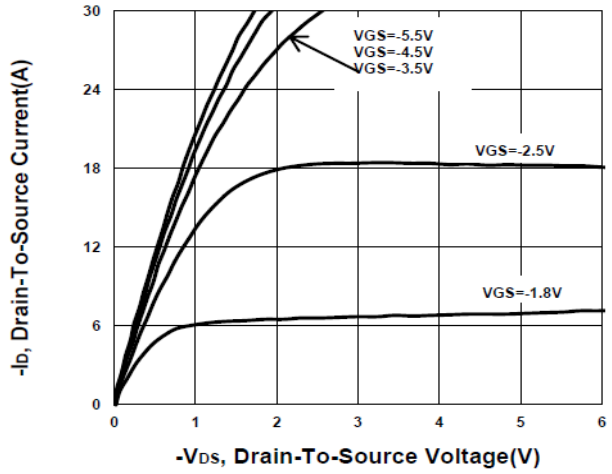
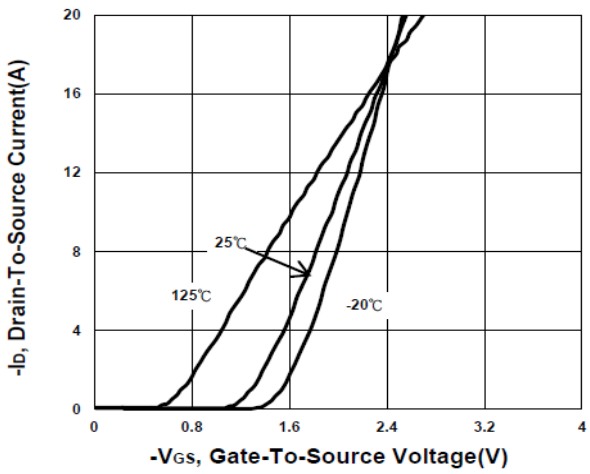
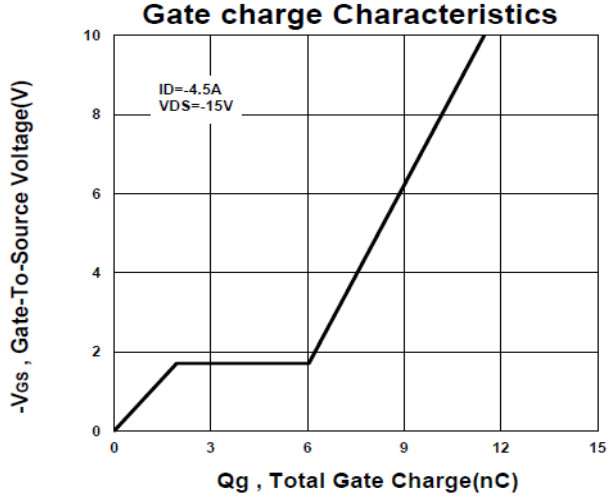
Output Characteristics



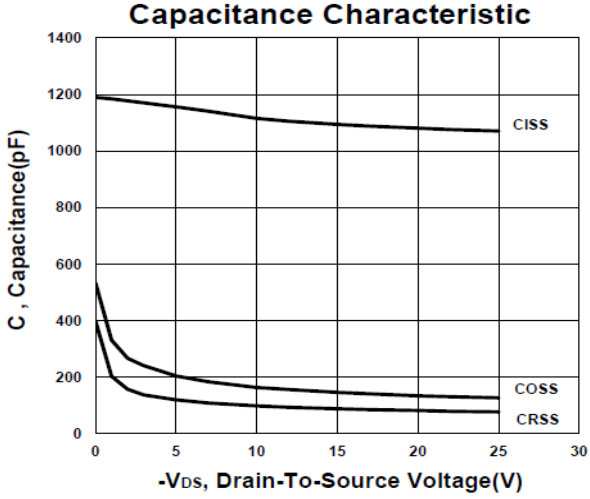
Transfer Characteristics



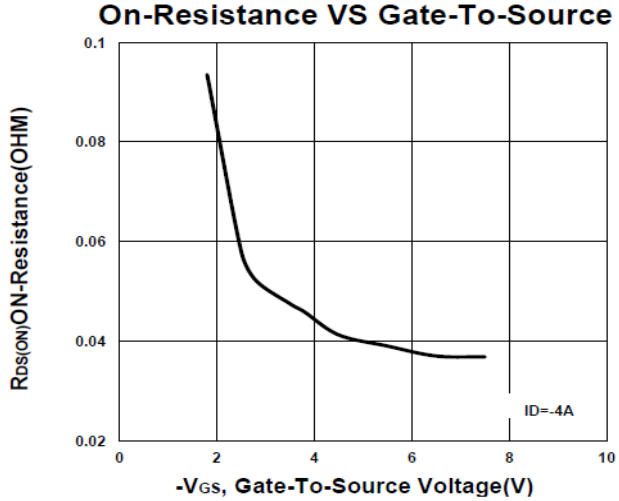
Gate charge Characteristics



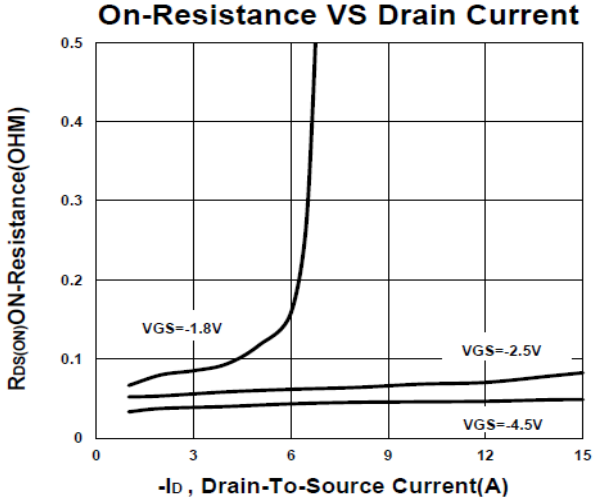
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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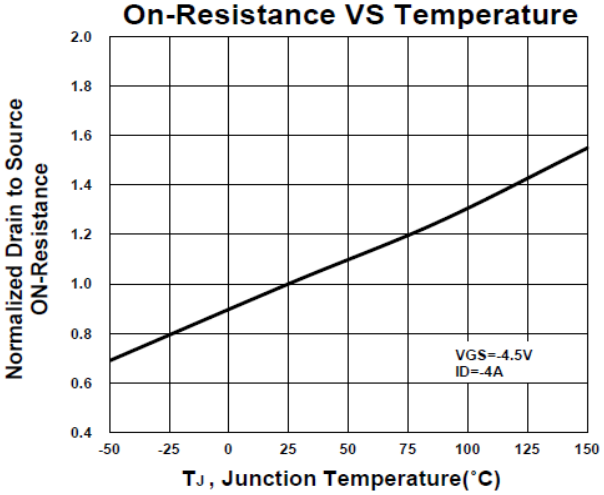
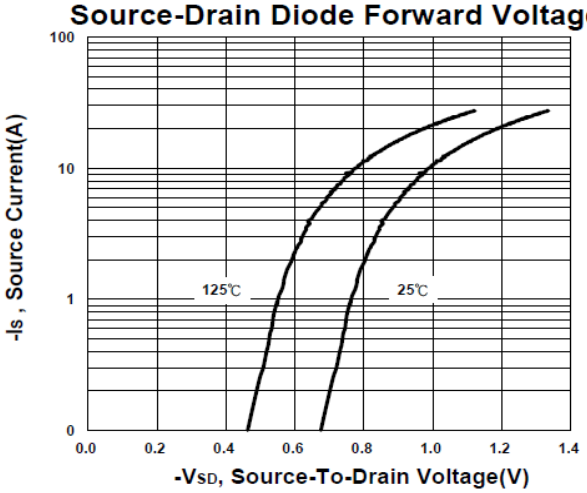
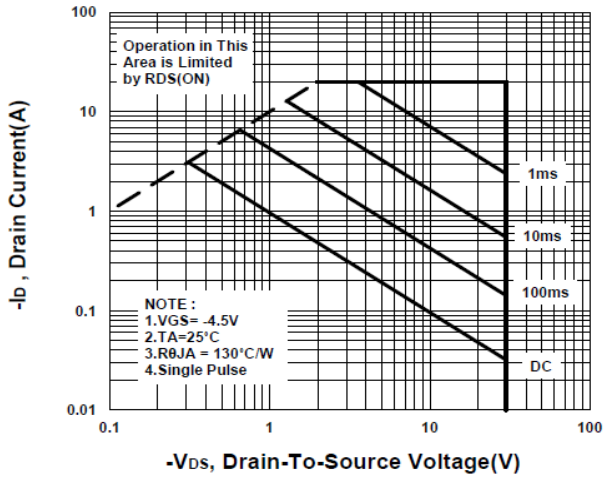
On-Resistance VS Temperature



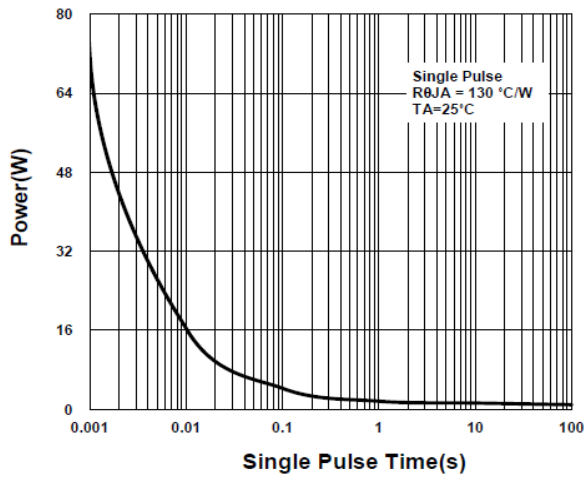
Source-Drain Diode Forward Voltage



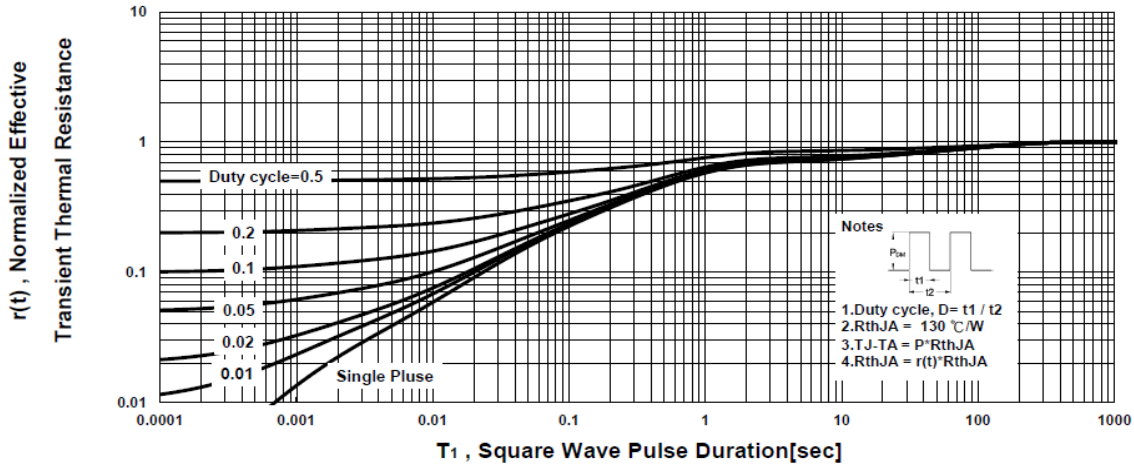
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

SOT-23-3 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A		1.05		H	0.1		0.2
B	2.4		3	I	0.3		0.6
C	1.4		1.73				
D	2.7		3.1				
E	1		1.31				
F	0		0.15				
G	0.3		0.5