UNIKC Semiconductor

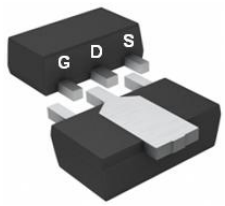
RoHS Compliant

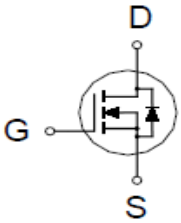
PF610BC

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	0.7Ω @V_{GS} = 10V	1.1A





SOT-89

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	1.1	A
	T_A = 70 °C		0.9	
Pulsed Drain Current[1]		I_{DM}	5	
Avalanche Current		I_{AS}	3.8	
Avalanche Energy	L =1mH	E_{AS}	7.2	mJ
Power Dissipation	T_A = 25 °C	P_D	1.9	W
	T_A = 70 °C		1.2	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		65	°C / W
Junction-to-Case	$R_{\theta JC}$		12	

[1]Pulse width limited by maximum junction temperature.

UNIKC Semiconductor

RoHS Compliant

PF610BC

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	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.8	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 = 70 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V , I_D = 0.5A		0.6	0.9	Ω
		V_{GS} = 10V , I_D = 0.9A		0.5	0.7	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 0.9A		1.7		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		244		pF
Output Capacitance	C_{oss}			63		
Reverse Transfer Capacitance	C_{rss}			24		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 0.9A		7		nC
Gate-Source Charge[2]	Q_{gs}			1		
Gate-Drain Charge[2]	Q_{gd}			3		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V, I_D ≅ 0.9A, V_{GS} = 10V, R_{GEN} = 6Ω		25		nS
Rise Time[2]	t_r			33		
Turn-Off Delay Time[2]	$t_{d(off)}$			47		
Fall Time[2]	t_f			25		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				1.1	A
Forward Voltage[1]	V_{SD}	I_F = 0.9A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F=2A,dI/dt = 100A / μS		34		nS
Reverse Recovery Charge	Q_{rr}			37		nC

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

[2]Independent of operating temperature.

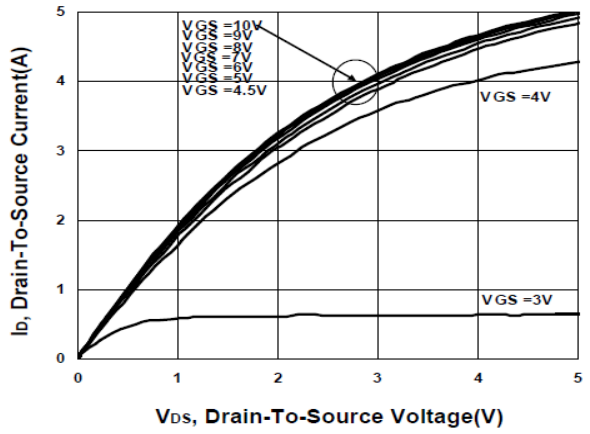
UNIKC Semiconductor

RoHS Compliant

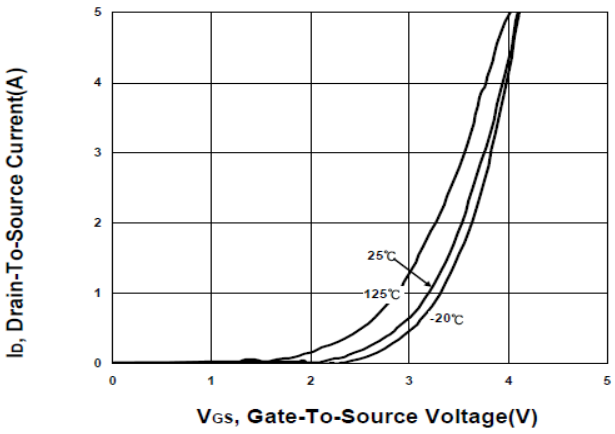
PF610BC

N-Channel Enhancement Mode MOSFET

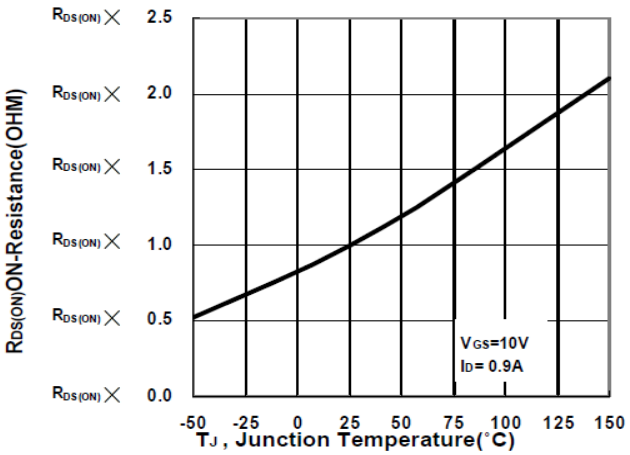
Output Characteristics



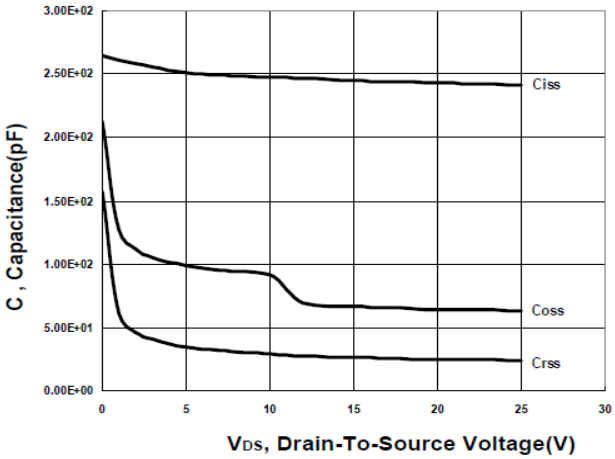
Transfer Characteristics



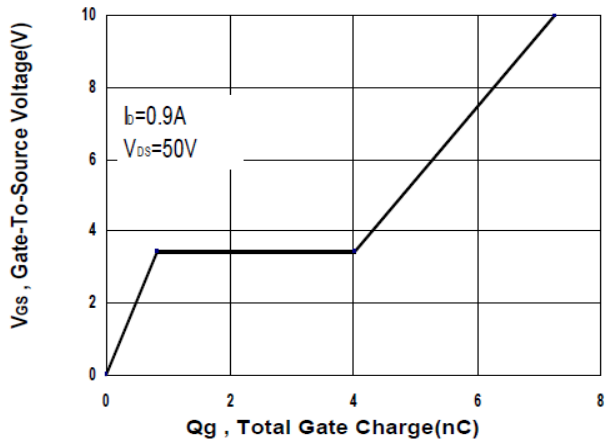
On-Resistance VS Temperature



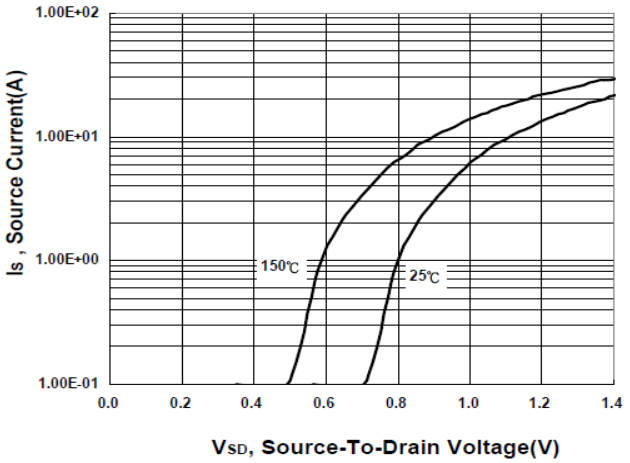
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



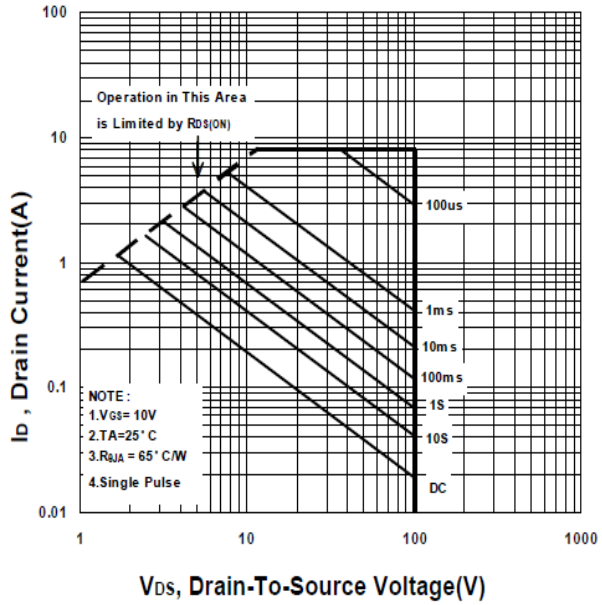
UNIKC Semiconductor

RoHS Compliant

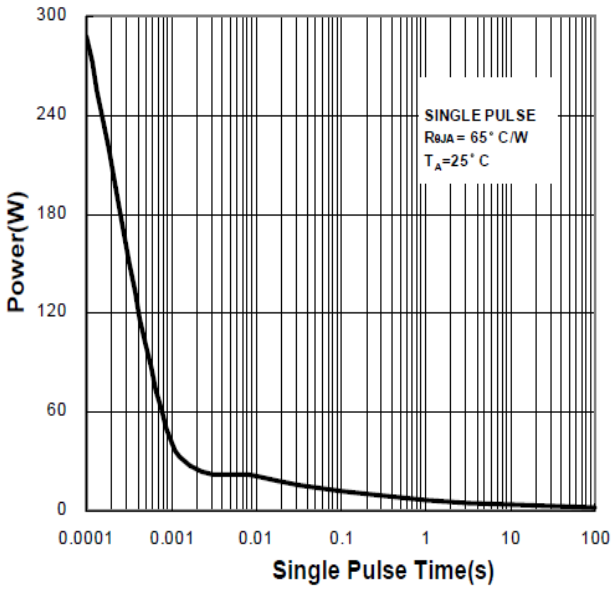
PF610BC

N-Channel Enhancement Mode MOSFET

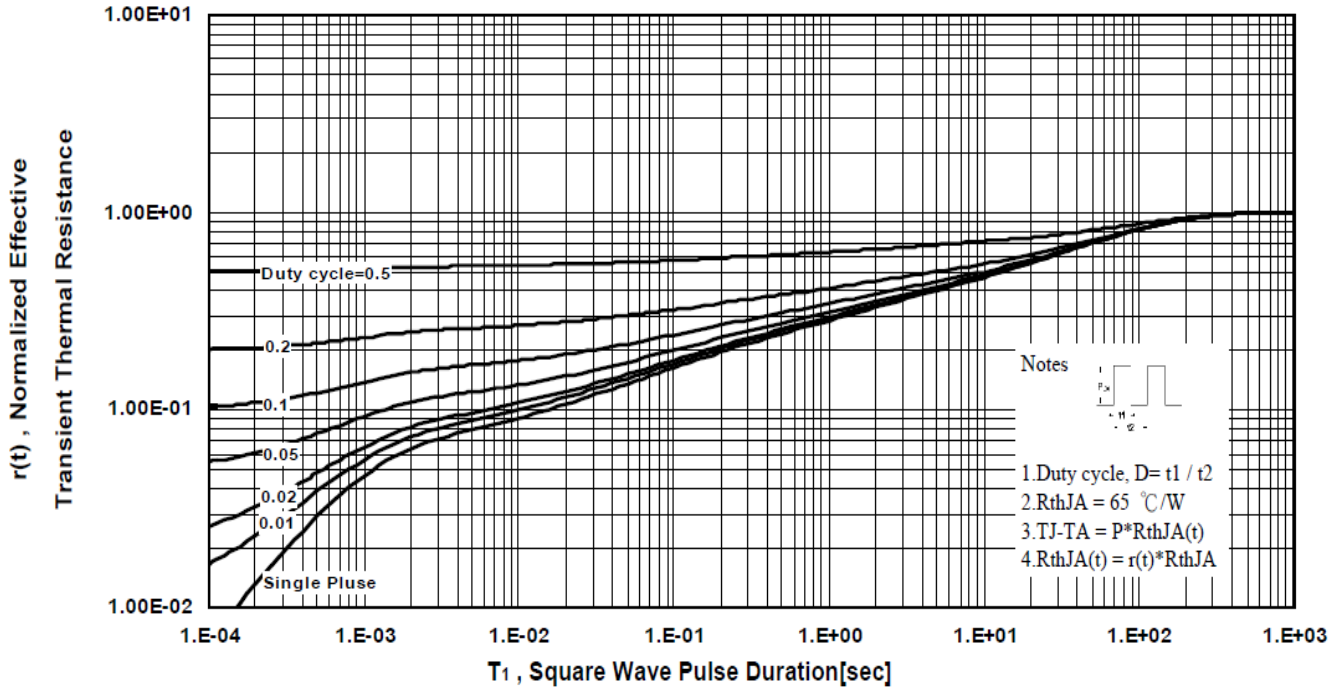
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



UNIKC Semiconductor

RoHS Compliant

PF610BC

N-Channel Enhancement Mode MOSFET

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