UNIKC
Semiconductor

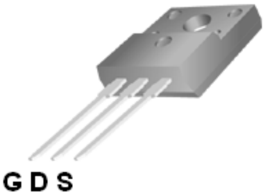
RoHS
Compliant

PA610DTF

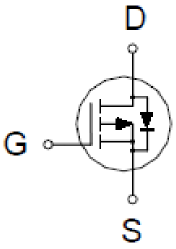
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-100V	200mΩ @V_{GS} = -10V	-10A



TO-220F



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	
Continuous Drain Current	T_C = 25 °C	I_D	-10	A
	T_C = 100 °C		-8	
Pulsed Drain Current[1]		I_{DM}	-40	
Avalanche Current		I_{AS}	-28	
Avalanche Energy	L = 0.1mH	E_{AS}	39	mJ
Power Dissipation	T_C = 25 °C	P_D	36	W
	T_C = 100 °C		23	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.5	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	
Case-to-Heatsink	$R_{\theta JS}$	0.5		

[1] Pulse width limited by maximum junction temperature.

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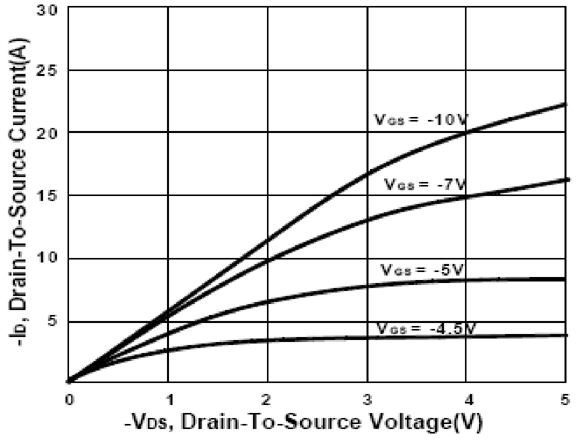
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			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	-2.0	-3.2	-4.0	
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	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -10A		187	200	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = -15V, I_D = -10A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -25V, f = 1MHz		1570		pF
Output Capacitance	C_{oss}			133		
Reverse Transfer Capacitance	C_{rss}			76		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = -10A, V_{GS} = -10V		26		nC
Gate-Source Charge[2]	Q_{gs}			8.3		
Gate-Drain Charge[2]	Q_{gd}			7.9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -50V, $I_D \cong$ -10A, V_{GS} = -10V, R_G = 2.5Ω		18	26	nS
Rise Time[2]	t_r			86	128	
Turn-Off Delay Time[2]	$t_{d(off)}$			82	122	
Fall Time[2]	t_f			83	125	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-10	A
Forward Voltage[1]	V_{SD}	I_F = Is, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = -10A, dI_F/dt = 100A / μS		17.2	265	nS
Reverse Recovery Charge	Q_{rr}			1.5	2.0	nC

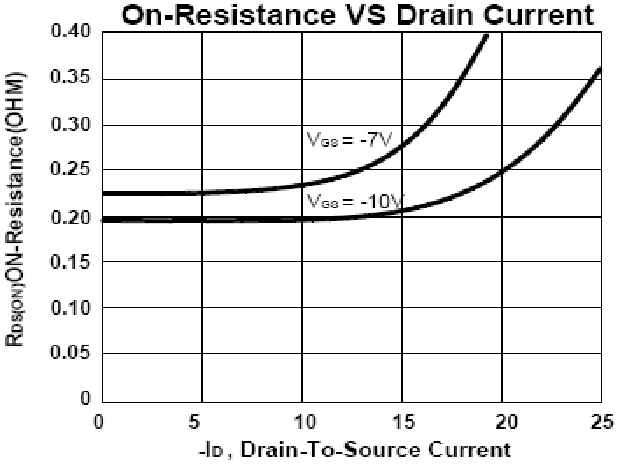
[1] Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2] Independent of operating temperature.

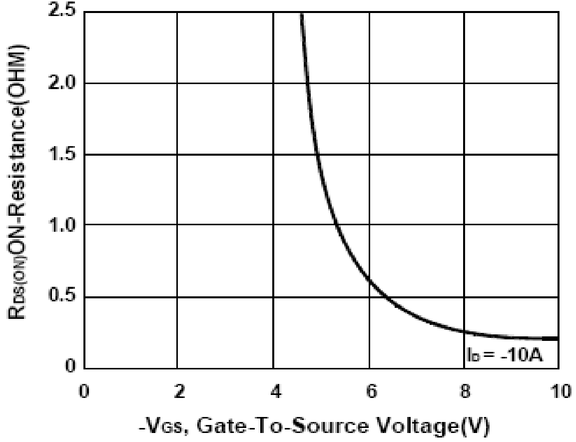
Output Characteristics



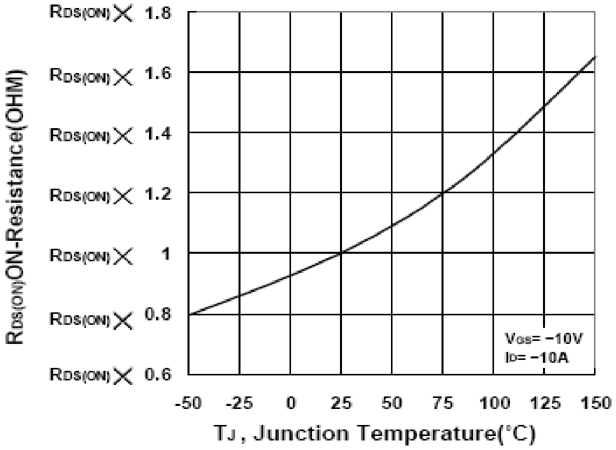
On-Resistance VS Drain Current



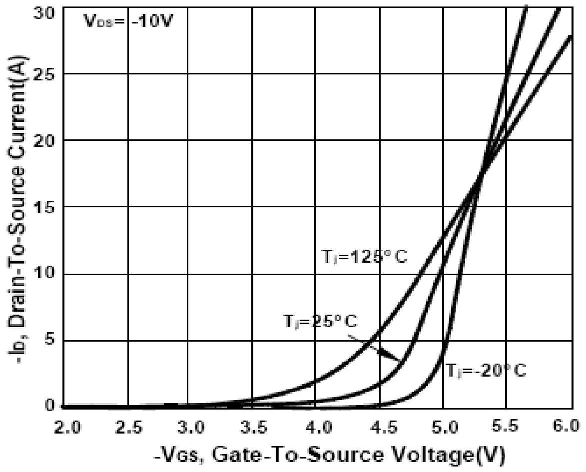
On-Resistance VS Gate-To-Source



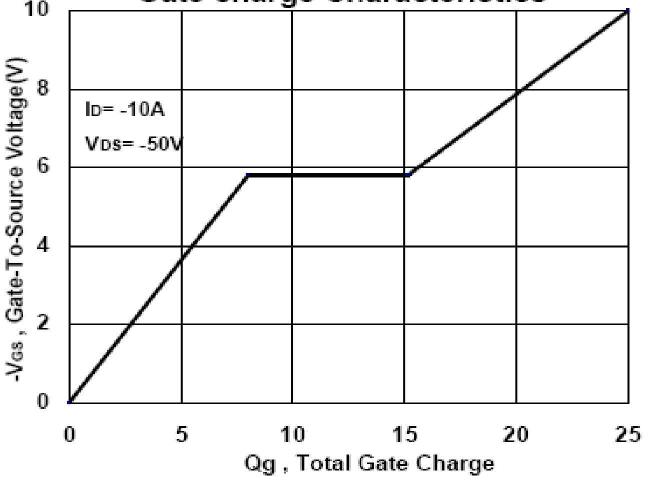
On-Resistance VS Temperature



Transfer Characteristics



Gate charge Characteristics



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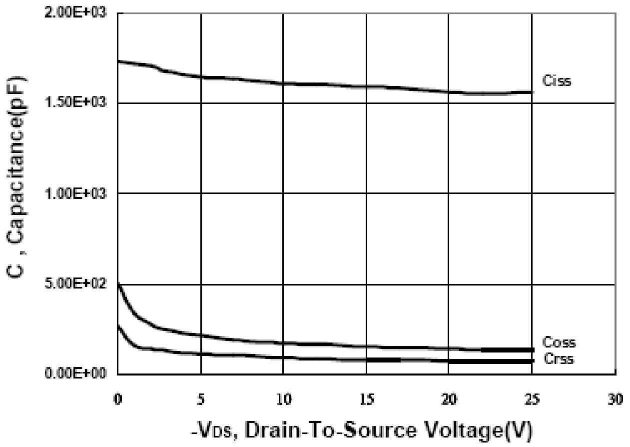
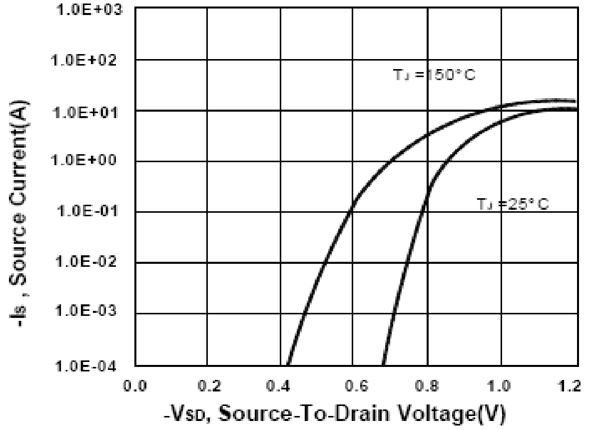
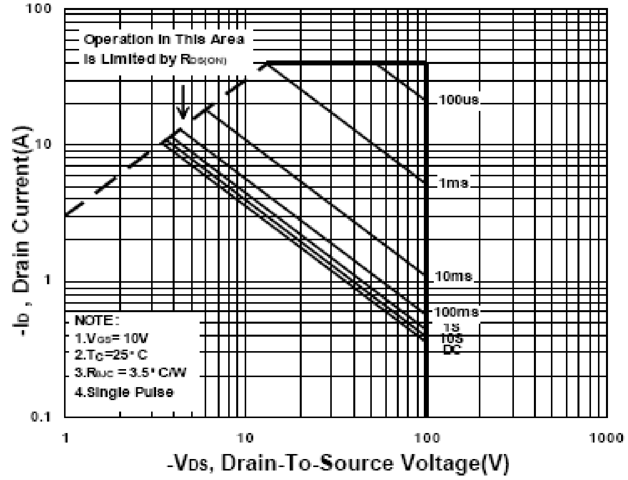


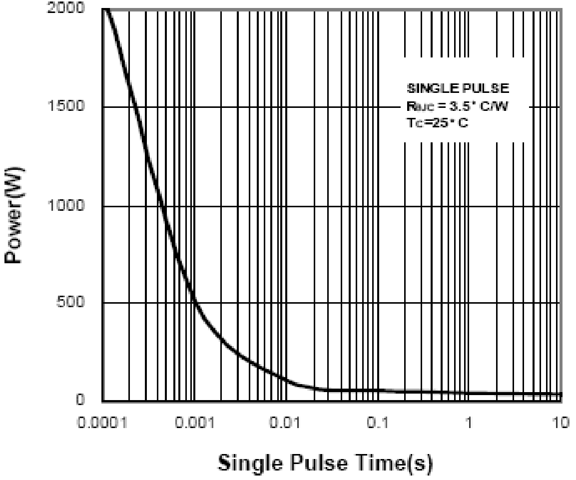
Capacitance Characteristic



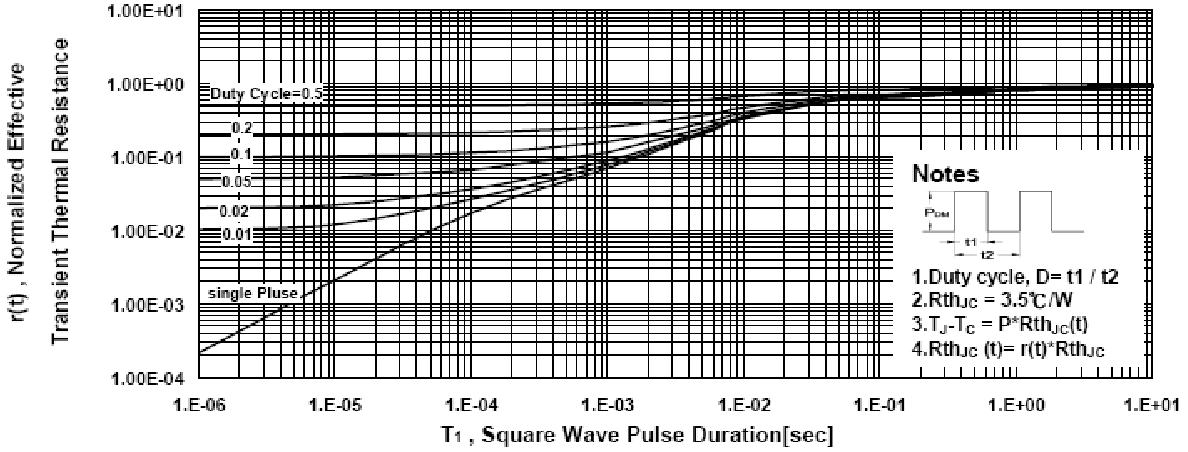
Body Diode Forward Voltage VS Source current



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

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Package Dimension

TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2		4.93	e	2.05	2.55	3.05
A1	2.34		3.1	F	27.45		30.6
B	17.77		20.3	G	7.72		9.3
b	0.6		1.05	H	6.1		7.1
b1	0.9	1.23	1.62	L	12.5		14.5
b2	0.6		1.9	L1	1.97		3.8
c	0.4		1.0	P	2.98		3.4
D	14.7		16.4	Q	2.1		2.96
D1	6.4		7.5	q	3.0		3.8
E	9.7		10.4