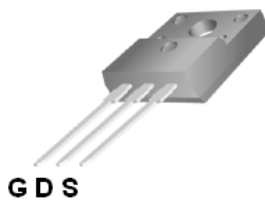


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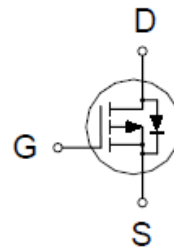
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-40V	16m Ω @ $V_{GS} = -10V$	-40A



TO-220F



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	-40	A
	$T_C = 100\text{ }^\circ\text{C}$		-25	
Pulsed Drain Current ¹		I_{DM}	-120	
Avalanche Current		I_{AS}	-40	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	78	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	42	W
	$T_C = 100\text{ }^\circ\text{C}$		17	
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-Case	$R_{\theta JC}$		3	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		60	

¹Pulse width limited by maximum junction temperature.

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P-Channel Enhancement Mode MOSFET

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

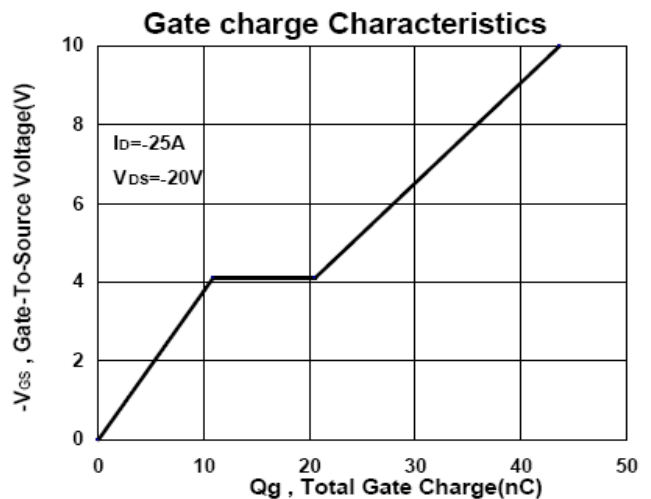
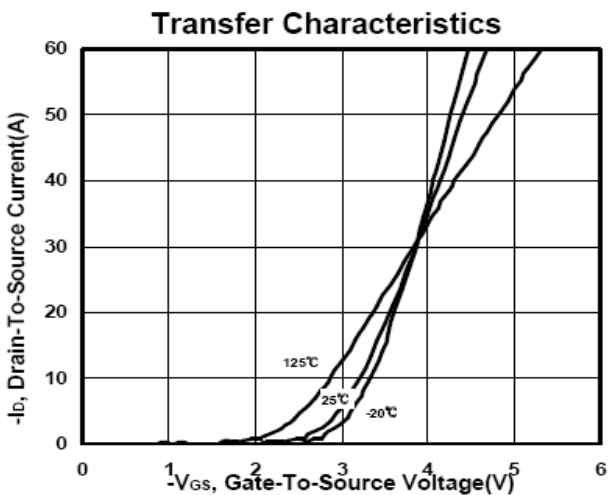
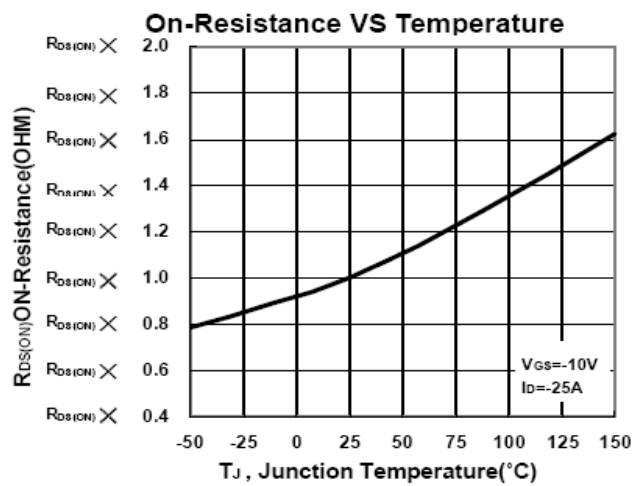
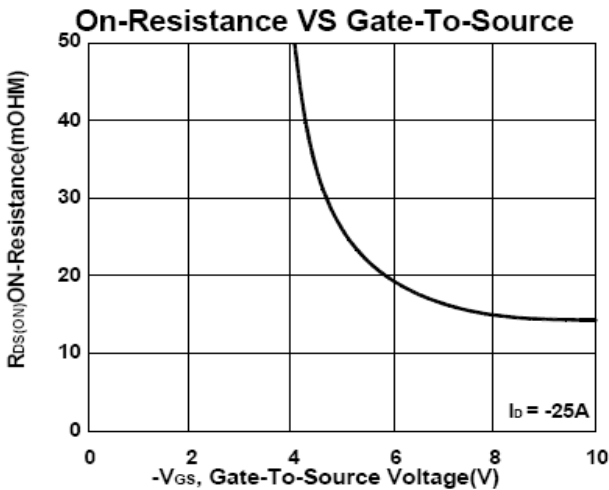
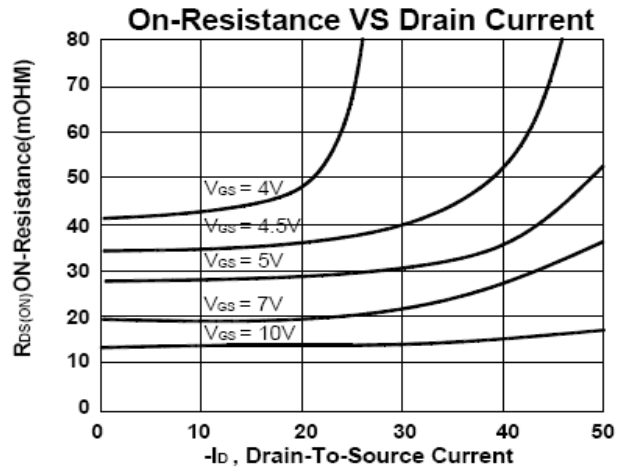
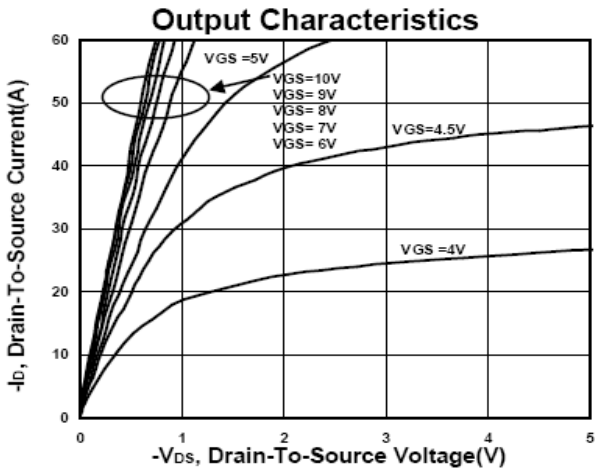
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.5	-2.2	-3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -32V, V _{GS} = 0V			-1	μA
		V _{DS} = -30V, V _{GS} = 0V, T _J = 125 °C			-10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-120			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -7V, I _D = -15A		16	20	mΩ
		V _{GS} = -10V, I _D = -25A		13	16	
Forward Transconductance ¹	g _{fs}	V _{DS} = -10V, I _D = -25A		38		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -20V, f = 1MHz		2310		pF
Output Capacitance	C _{oss}			438		
Reverse Transfer Capacitance	C _{rss}			320		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		4.3		Ω
Total Gate Charge ²	Q _g	V _{DS} = 0.5V _{(BR)DSS} , I _D = -25A, V _{GS} = -10V		45		nC
Gate-Source Charge ²	Q _{gs}			12		
Gate-Drain Charge ²	Q _{gd}			11		
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = -20V, I _D ≅ -25A, V _{GS} = -10V, R _{GS} = 6Ω		15		nS
Rise Time ²	t _r			43		
Turn-Off Delay Time ²	t _{d(off)}			62		
Fall Time ²	t _f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I _S				-40	A
Forward Voltage ¹	V _{SD}	I _F = -25A, V _{GS} = 0V			-1.3	V
Reverse Recovery Time	t _{rr}	I _F = -25A, di _F /dt = 100A / μS		43		nS
Reverse Recovery Charge	Q _{rr}				31	

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

²Independent of operating temperature.

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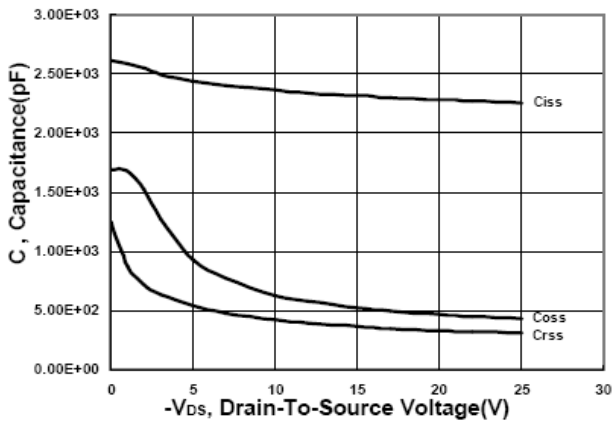
P-Channel Enhancement Mode MOSFET



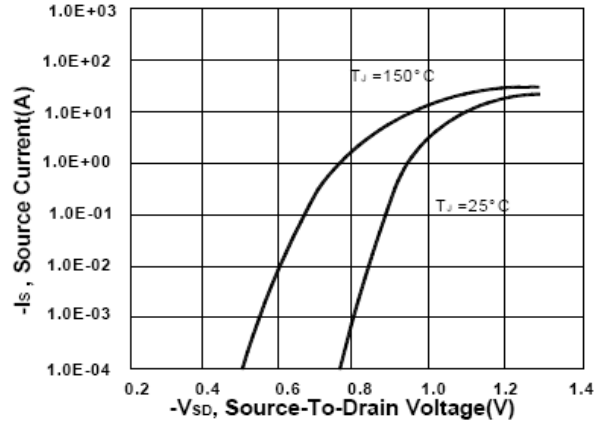
P1604ETF

P-Channel Enhancement Mode MOSFET

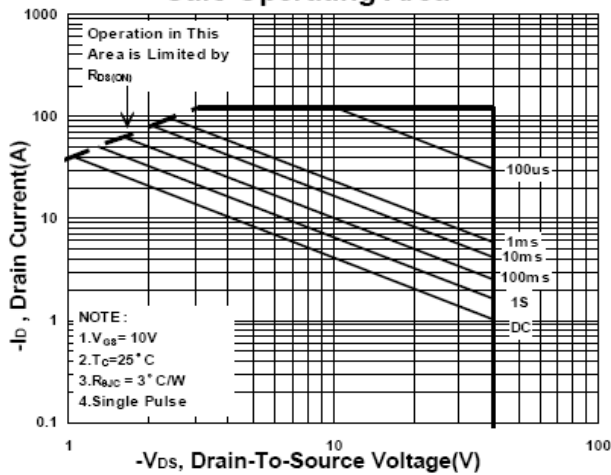
Capacitance Characteristic



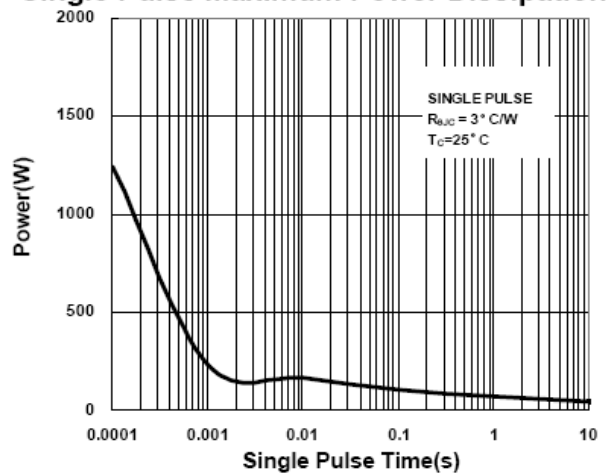
Body Diode Forward Voltage VS Source current



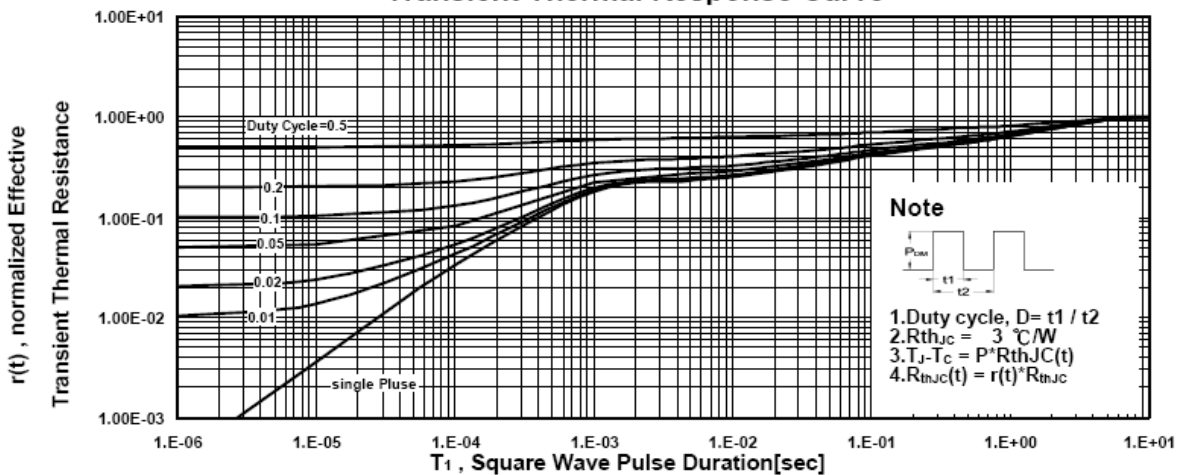
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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P-Channel Enhancement Mode MOSFET

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				

