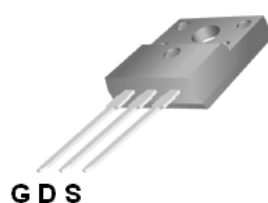


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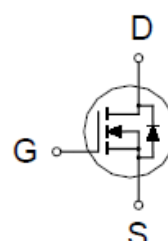
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
150V	50m Ω @ $V_{GS} = 10V$	22A



TO-220F



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ²	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	22	A
	$T_C = 100\text{ }^{\circ}\text{C}$		14	
Pulsed Drain Current ¹		I_{DM}	90	
Avalanche Current		I_{AS}	26	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	35	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	56	W
	$T_C = 100\text{ }^{\circ}\text{C}$		22	
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	$R_{\theta JC}$		2.25	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse 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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	150			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	2.5	4.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 120V, V_{GS} = 0V$			1	μA
		$V_{DS} = 100V, V_{GS} = 0V, T_J = 125^\circ C$			10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{GS} = 10V, V_{DS} = 10V$	90			A
Drain-Source On-State	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$		40	50	mΩ
Forward Transconductance ¹	g_{fs}	$V_{DS} = 25V, I_D = 20A$		40		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		5240		pF
Output Capacitance	C_{oss}			223		
Reverse Transfer Capacitance	C_{rss}			152		
Total Gate Charge ²	Q_g	$V_{DS} = 75V, V_{GS} = 10V, I_D = 20A$		100		nC
Gate-Source Charge ²	Q_{gs}			23		
Gate-Drain Charge ²	Q_{gd}			37		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 75V, I_D \cong 20A$ $V_{GS} = 10V, R_{GS} = 2.5\Omega$		16		nS
Rise Time ²	t_r			70		
Turn-Off Delay Time ²	$t_{d(off)}$			25		
Fall Time ²	t_f			40		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)						
Continuous Current ³	I_S				22	A
Forward Voltage ¹	V_{SD}	$I_F = 20A, V_{GS} = 0V$			1.4	V
Reverse Recovery Time	t_{rr}	$I_F = 20A, dI_F/dt = 100A / \mu S$		87		nS
Reverse Recovery Charge	Q_{rr}			265		nC

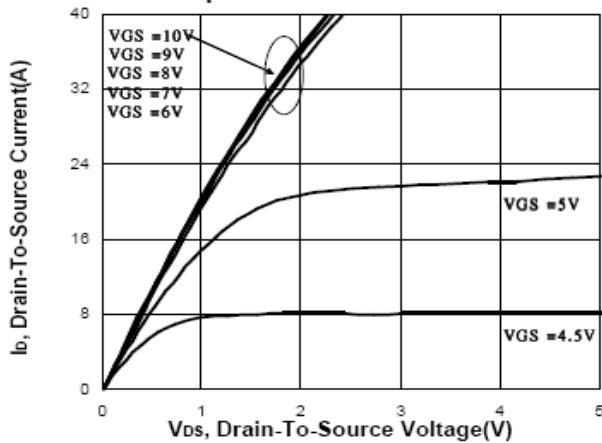
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

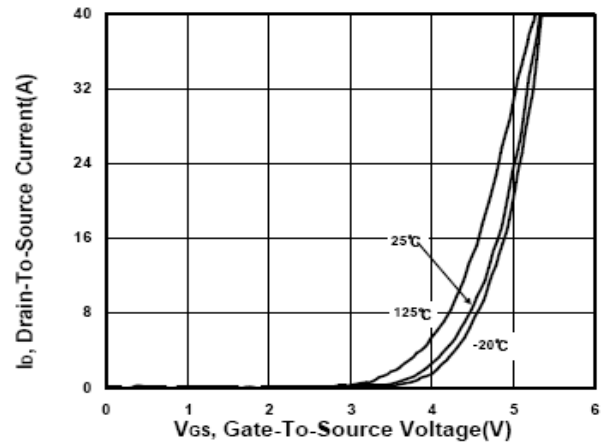
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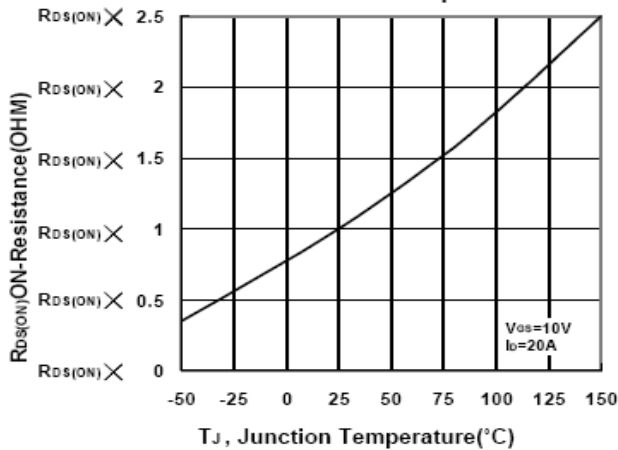
Output Characteristics



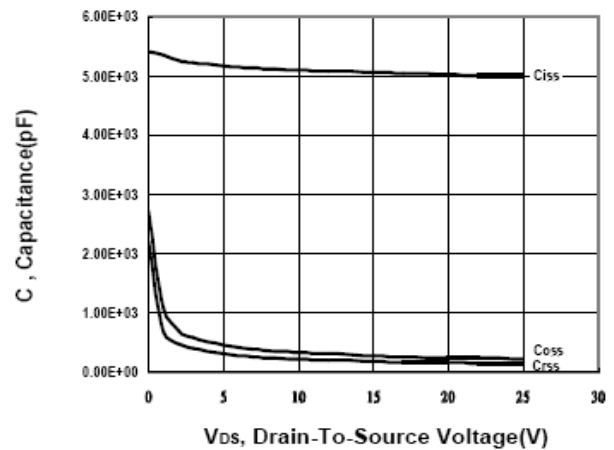
Transfer Characteristics



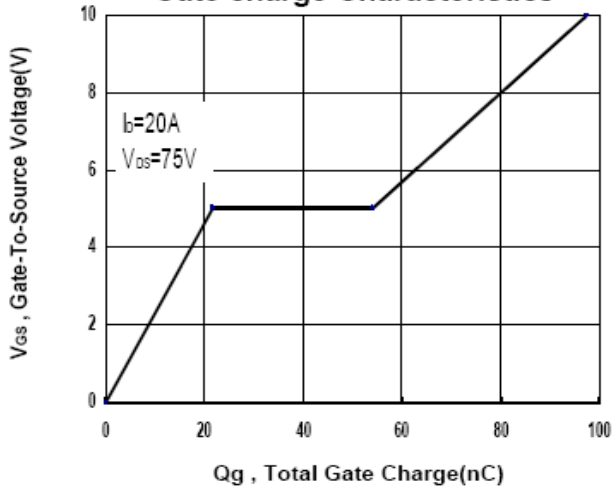
On-Resistance VS Temperature



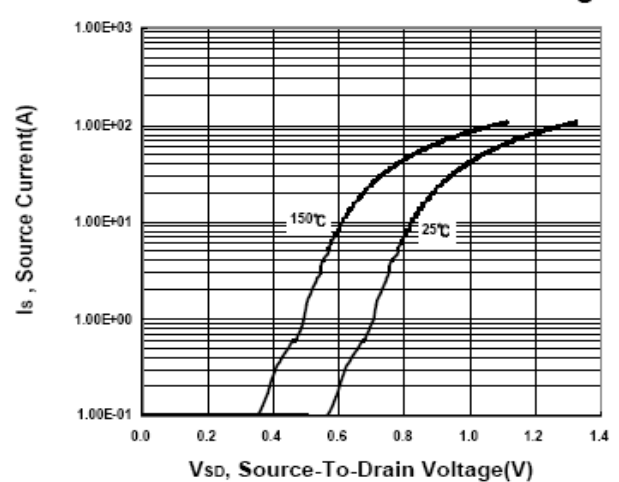
Capacitance Characteristic



Gate charge Characteristics



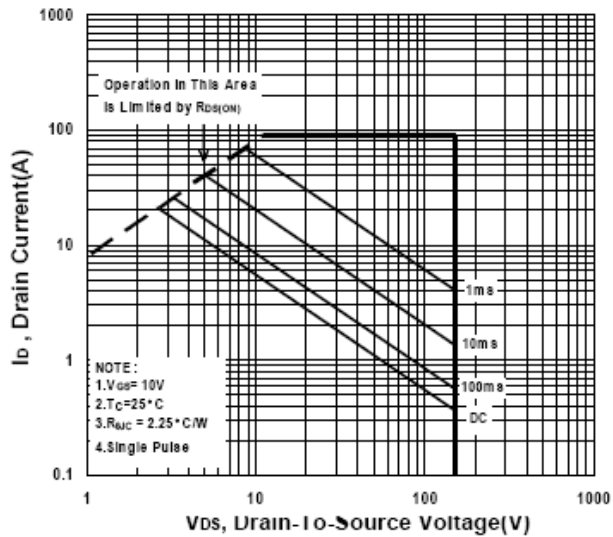
Source-Drain Diode Forward Voltage



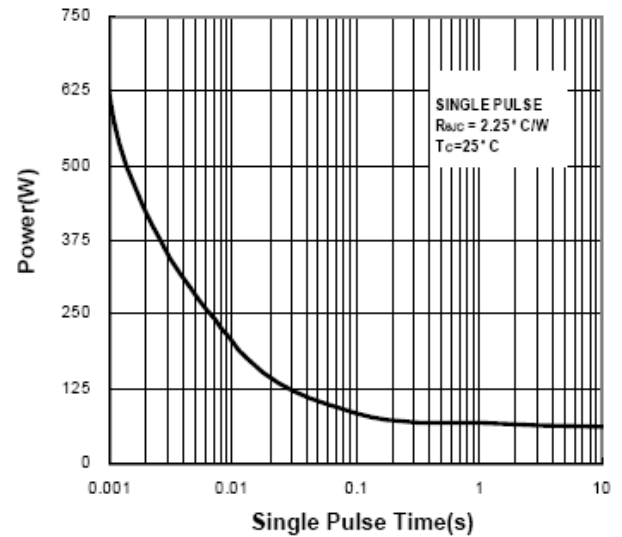
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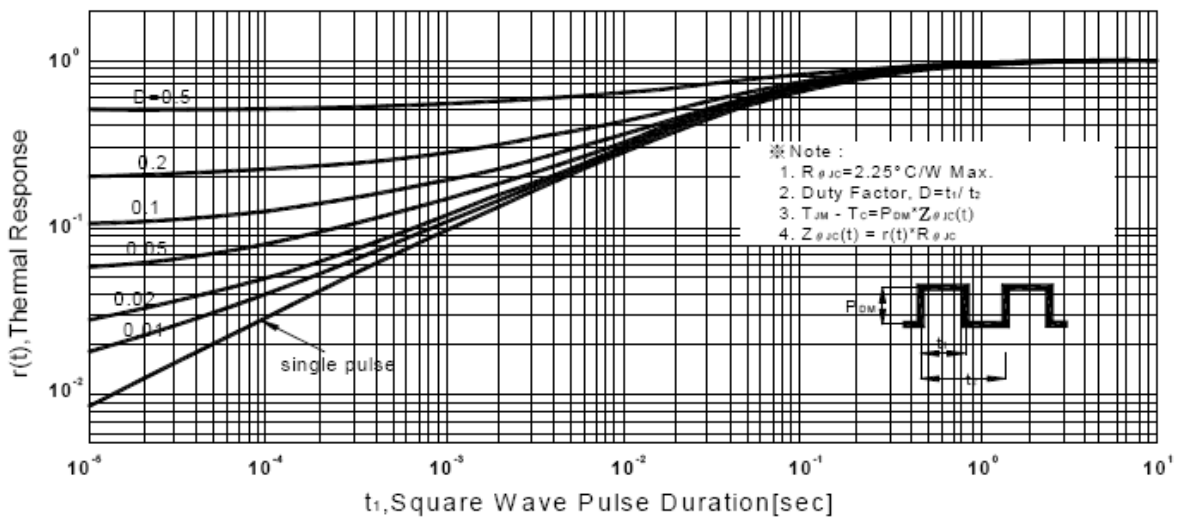
Safe Operating Area



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				

