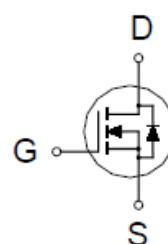
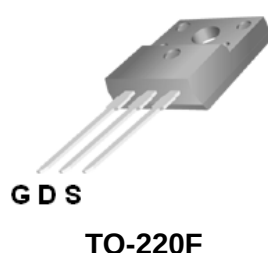


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N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
500V	0.85Ω @ $V_{GS} = 10V$	8A



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	500	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current ²	$T_C = 25\text{ }^\circ\text{C}$	I_D	8	A
	$T_C = 100\text{ }^\circ\text{C}$		5	
Pulsed Drain Current ^{1, 2}		I_{DM}	30	
Avalanche Current ³		I_{AS}	6.8	
Avalanche Energy ³	$L = 10\text{mH}$	E_{AS}	232	mJ
Power Dissipation ^A	$T_C = 25\text{ }^\circ\text{C}$	P_D	39	W
	$T_C = 100\text{ }^\circ\text{C}$		15.6	
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	$R_{\theta JC}$		1	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse width limited by maximum junction temperature.

²Limited only by maximum temperature allowed.

³ $V_{DD} = 50V$, Starting $T_J = 25^\circ\text{C}$

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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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	500			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5		4.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 500V, V_{GS} = 0V, T_C = 25\text{ }^{\circ}C$			25	μA
		$V_{DS} = 500V, V_{GS} = 0V, T_C = 100\text{ }^{\circ}C$			250	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 4A$		0.65	0.85	Ω
Forward Transconductance ¹	g_{fs}	$V_{DS} = 20V, I_D = 4A$		7		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		1250		pF
Output Capacitance	C_{oss}			138		
Reverse Transfer Capacitance	C_{rss}			14		
Total Gate Charge ²	Q_g	$V_{DS} = 250V, V_{GS} = 10V, I_D = 4.8A$		21.6		nC
Gate-Source Charge ²	Q_{gs}			7.2		
Gate-Drain Charge ²	Q_{gd}			6.6		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 250V, I_D = 4.8A, R_G = 25\Omega$		23		nS
Rise Time ²	t_r			71		
Turn-Off Delay Time ²	$t_{d(off)}$			112		
Fall Time ²	t_f			69		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}C$)						
Continuous Current ³	I_S				8	A
Forward Voltage ¹	V_{SD}	$I_F = 4A, V_{GS} = 0V$			1.7	V
Reverse Recovery Time	t_{rr}	$I_F = 4.8A, dl_F/dt = 100A / \mu S, V_{GS} = 0V$		480		nS
Reverse Recovery Charge	Q_{rr}			5		nC

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

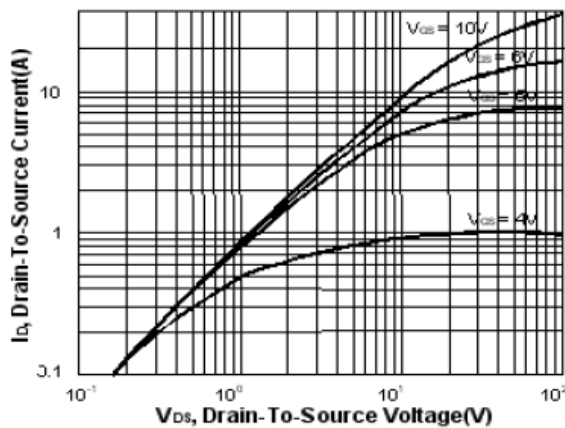
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

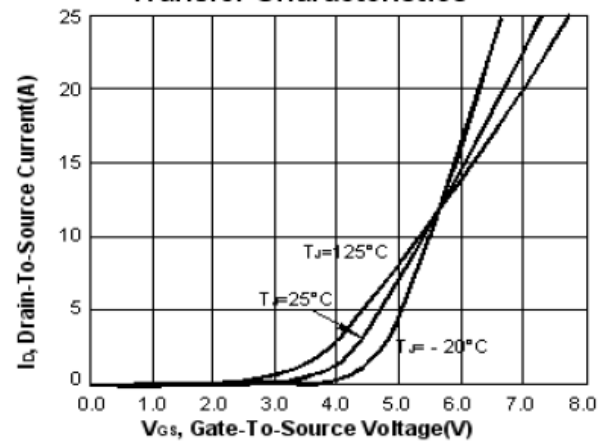
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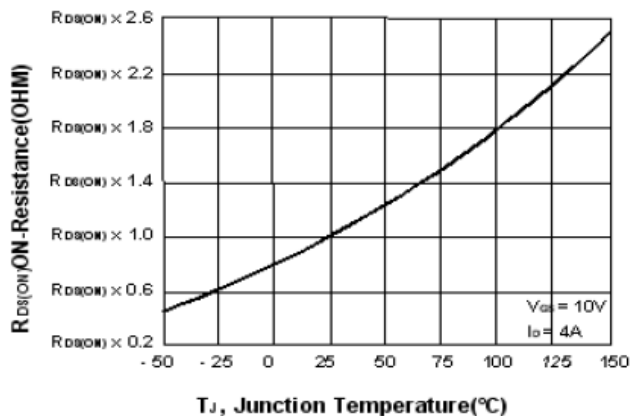
Output Characteristics



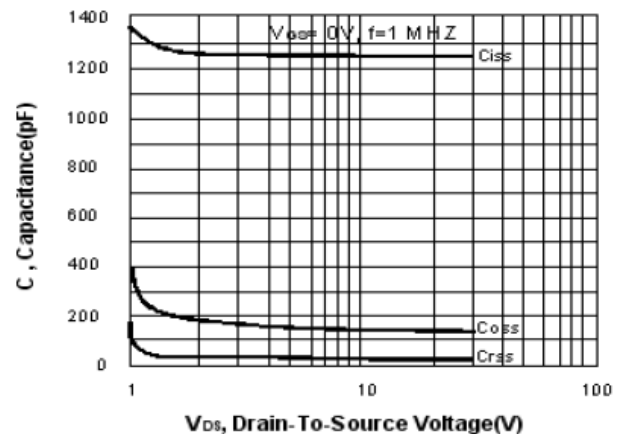
Transfer Characteristics



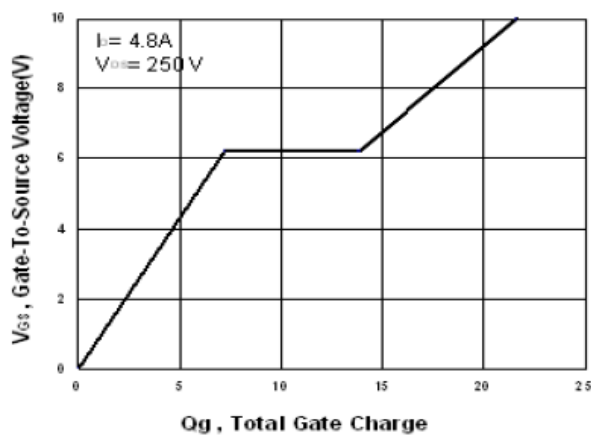
On-Resistance VS Temperature



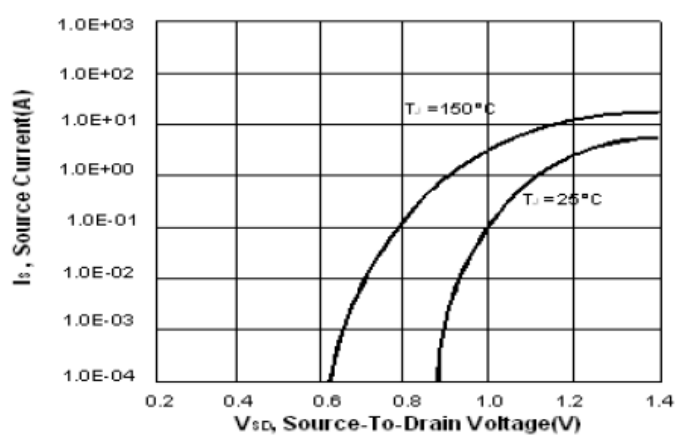
Capacitance Characteristic



Gate charge Characteristics



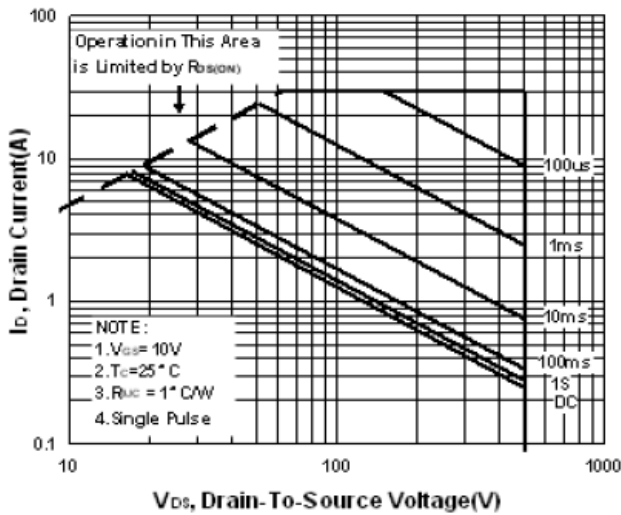
Source-Drain Diode Forward Voltage



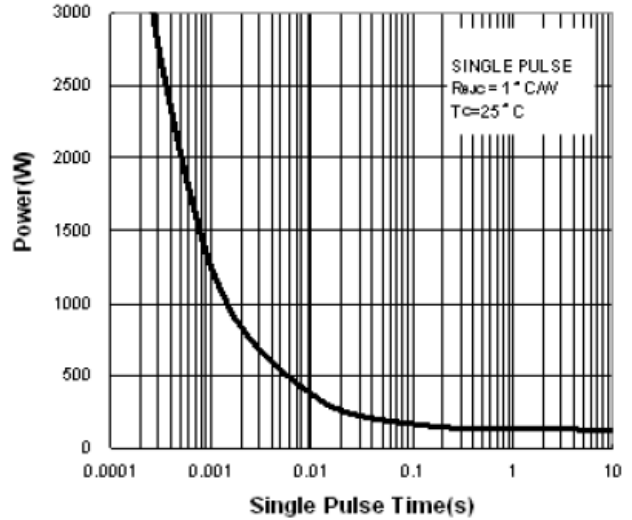
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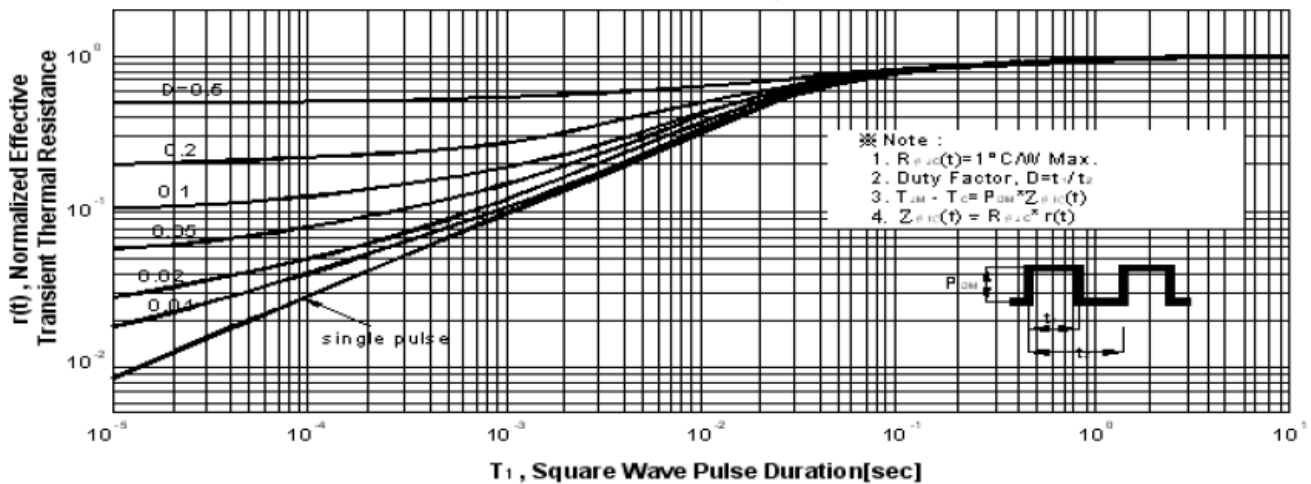
Safe Operating Area



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				

