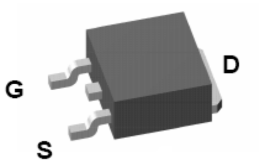
P9006EDG

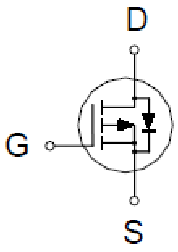
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-60V	90mΩ @V_{GS} = -10V	-15A



TO-252



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25 °C	I_D	-15	A
	T_C = 100 °C		-10	
Pulsed Drain Current[1]		I_{DM}	-50	
Avalanche Current		I_{AS}	-25	
Avalanche Energy	L = 0.1mH	E_{AS}	31	mJ
Power Dissipation	T_C = 25 °C	P_D	41	W
	T_C = 100 °C		16	
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	°C / W
Junction-to-Ambient	$R_{\theta JA}$		75	

[1] Pulse width limited by maximum junction temperature.

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

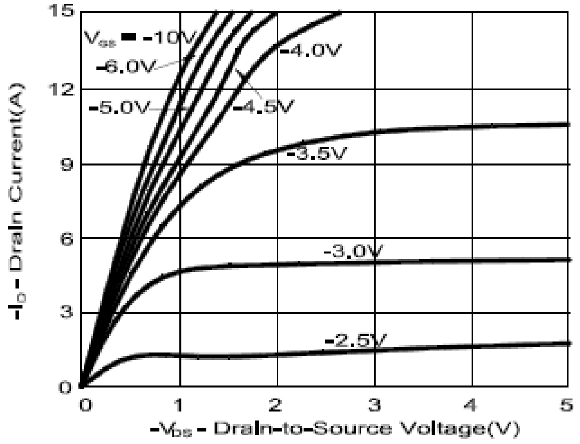
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.7	-3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -48V, V_{GS} = 0V			1	μA
		V_{DS} = -40V, V_{GS} = 0V , T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-50			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -6A		100	135	mΩ
		V_{GS} = -10V, I_D = -7A		70	90	
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -7A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -25V, f = 1MHz		1130		pF
Output Capacitance	C_{oss}			122		
Reverse Transfer Capacitance	C_{rss}			75		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -7A		23.1		nC
Gate-Source Charge[2]	Q_{gs}			6.8		
Gate-Drain Charge[2]	Q_{gd}			3.8		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -20V I_D≅ -1A, V_{GS} = -10V, R_{GS} = 6Ω		7		nS
Rise Time[2]	t_r			10		
Turn-Off Delay Time[2]	$t_{d(off)}$			19		
Fall Time[2]	t_f			12		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				-15	A
Forward Voltage[1]	V_{SD}	I_F = -7A, V_{GS} = 0V			-1	V
Reverse Recovery Time	t_{rr}	I_F = -7A, dI_F/dt = 100A / μS		37		nS
Reverse Recovery Charge	Q_{rr}			53		nC

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

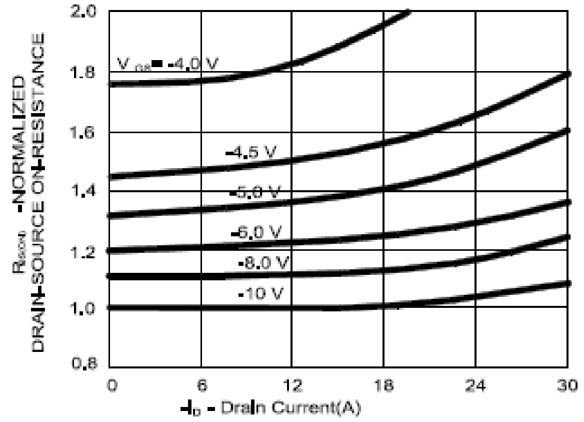
[2] Independent of operating temperature.

[3] Pulse width limited by maximum junction temperature.

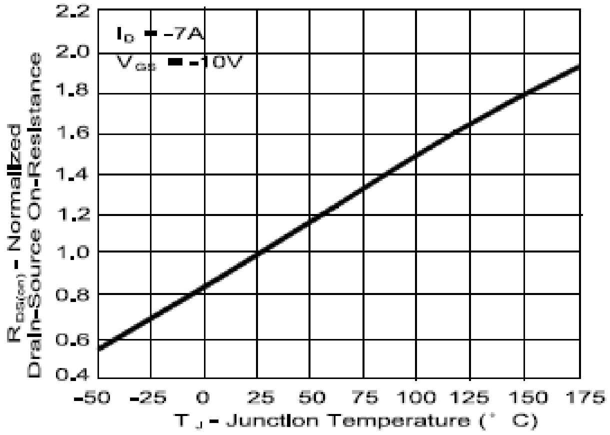
On-Region Characteristics



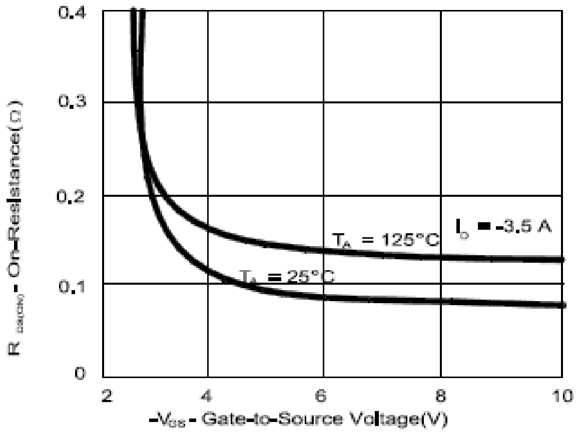
On-Resistance VS Drain Current



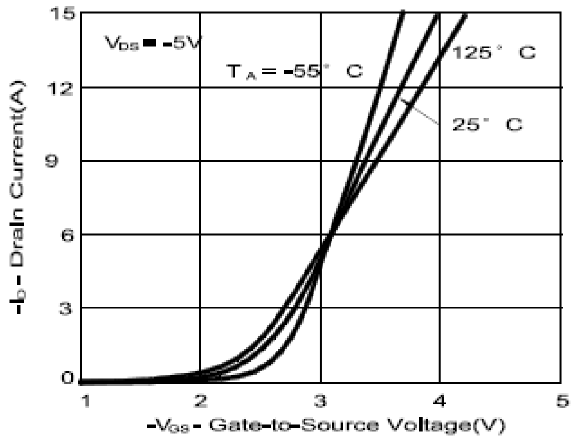
On-Resistance Variation with Temperature



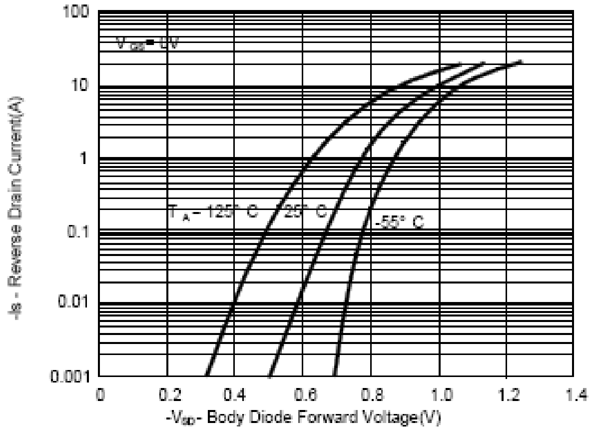
On-Resistance VS Gate-to-Source



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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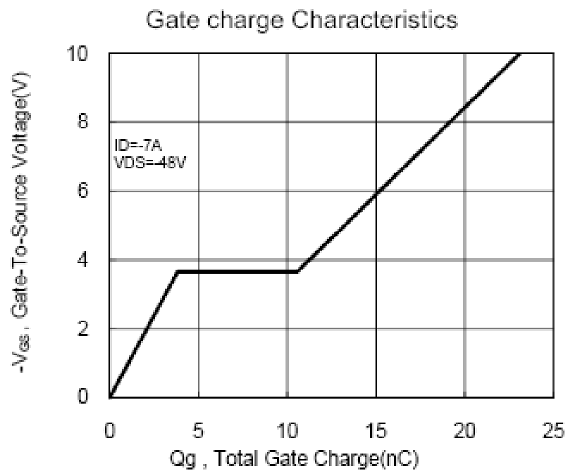

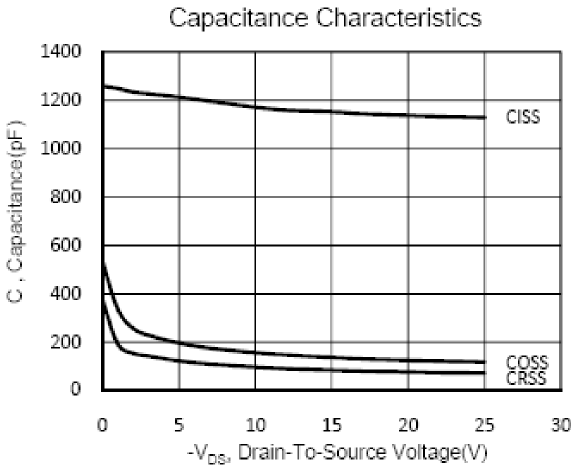

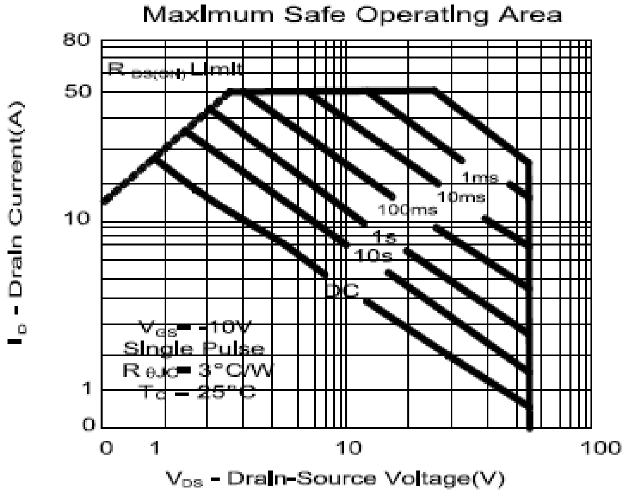

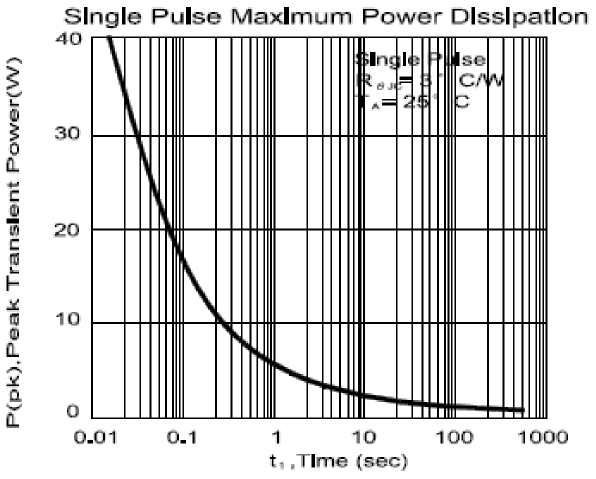

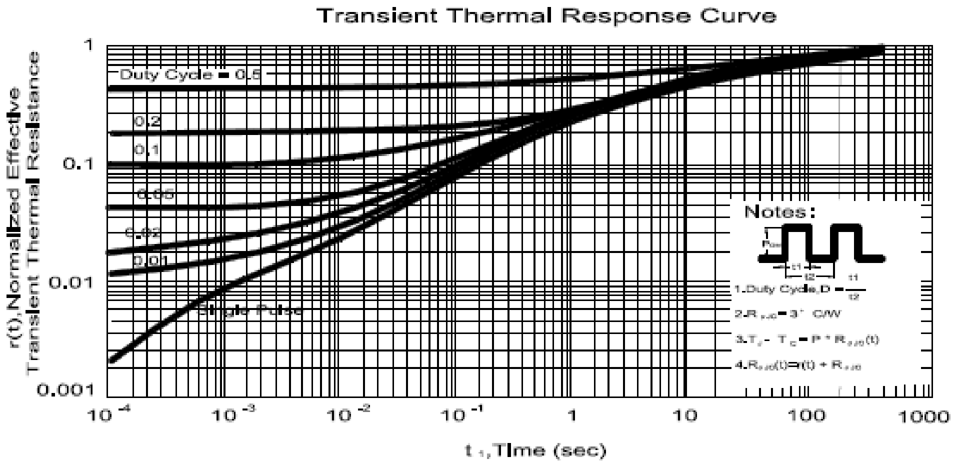

Package Dimension

TO-252 (DPAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	8.9	10	10.41	J	4.8		5.64
B	2.1	2.2	2.5	K	0.15		1.49
C	0.4	0.5	0.61	L	0.4	0.76	0.91
D	0.82	1.2	1.5	M	4.2	4.58	5
E	0.35	0.5	0.65	S	4.57	5.1	5.52
F	0		0.2	T	3.81	4.75	5.24
G	5.3	6.1	6.3	U	1.4		1.78
H	0.5		1.7	V	0.55	1.25	1.7
I	6.3	6.5	6.8