UNIKC
Semiconductor

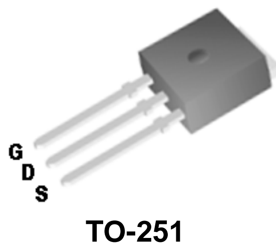
RoHS Compliant

P9006EI

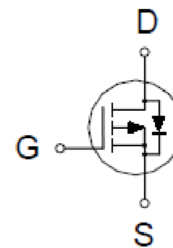
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-60V	90mΩ @V_{GS} = -10V	-18A



TO-251



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25 °C	I_D	-18	A
	T_C = 100 °C		-11	
Pulsed Drain Current[2]		I_{DM}	-50	
Avalanche Current		I_{AS}	-24	
Avalanche Energy	L = 0.1mH	E_{AS}	30	mJ
Power Dissipation	T_C = 25 °C	P_D	51	W
	T_C = 100 °C		20	
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	$R_{\theta JC}$		2.45	°C / W
Junction-to-Ambient	$R_{\theta JA}$		50	

[1]Pulse width limited by maximum junction temperature.

[2]Limited by package.

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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	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	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	µA
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -10V, V_{GS} = 10V	-50			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = -6A		82	135	mΩ
		V_{GS} = -10V, I_D = -18A		72	90	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -18A		15		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -25V, f = 1MHz		1130		pF
Output Capacitance	C_{oss}			130		pF
Reverse Transfer Capacitance	C_{rss}			79		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		4.75		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5V(BR)DSS, V_{GS} = -10V, I_D = -18A		18		nC
Gate-Source Charge[2]	Q_{gs}			6		nC
Gate-Drain Charge[2]	Q_{gd}			4		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -30V, I_D ≅ -18A, V_{GS} = -10V, R_{GS} = 2.5Ω		10		nS
Rise Time[2]	t_r			15		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			27		nS
Fall Time[2]	t_f			17		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-18	A
Forward Voltage[1]	V_{SD}	I_F = -18A, V_{GS} = 0V			-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -18A, dI_F/dt = 100A / µS		72		nS
Reverse Recovery Charge	Q_{rr}			127		nC

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

[2]Independent of operating temperature.

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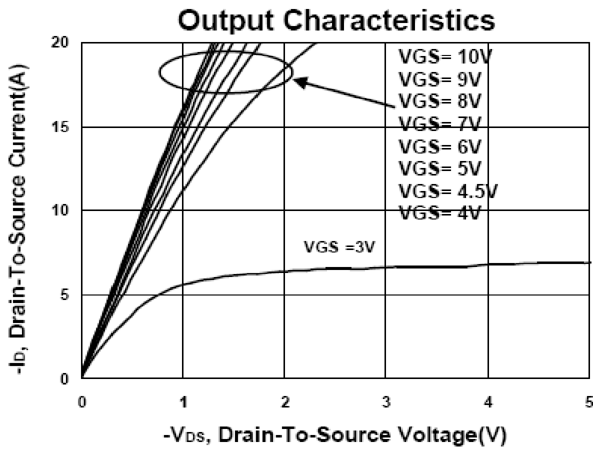
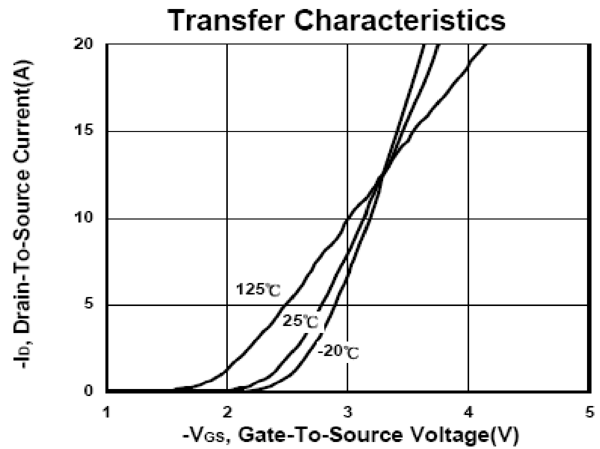
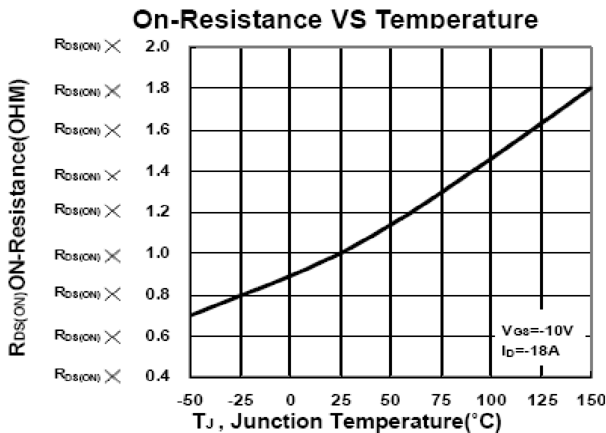
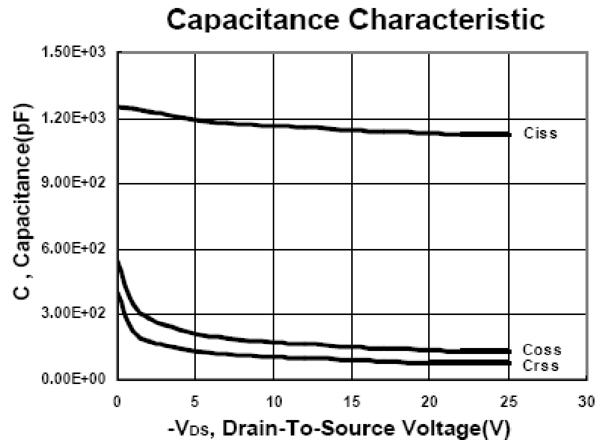
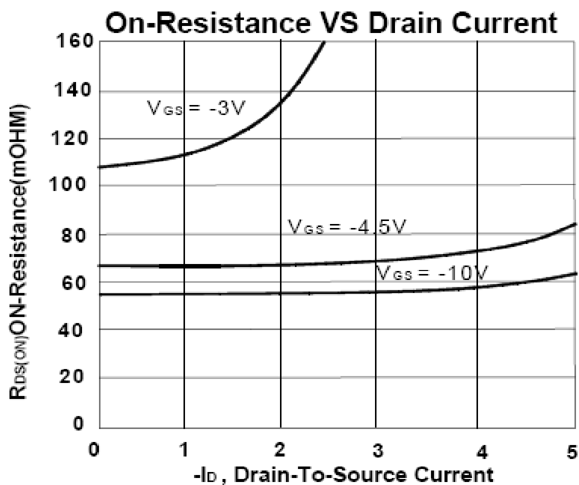
TYPICAL PERFORMANCE CHARACTERISTICS P-CHANNEL

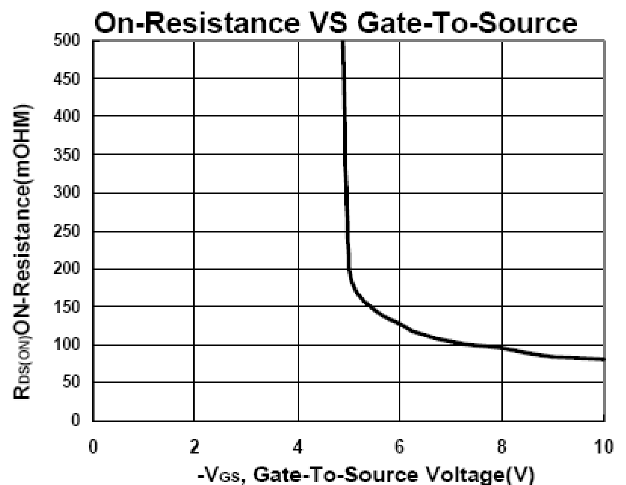












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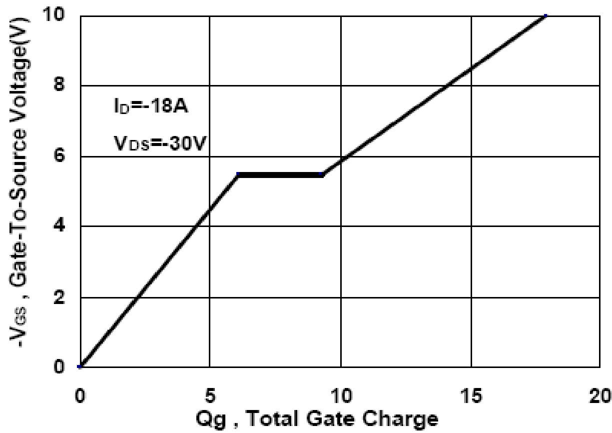

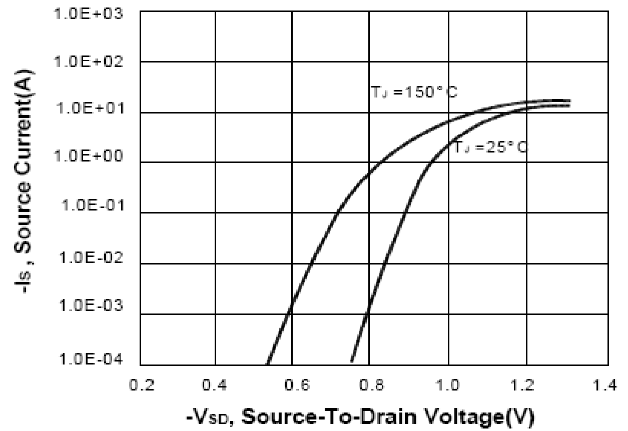

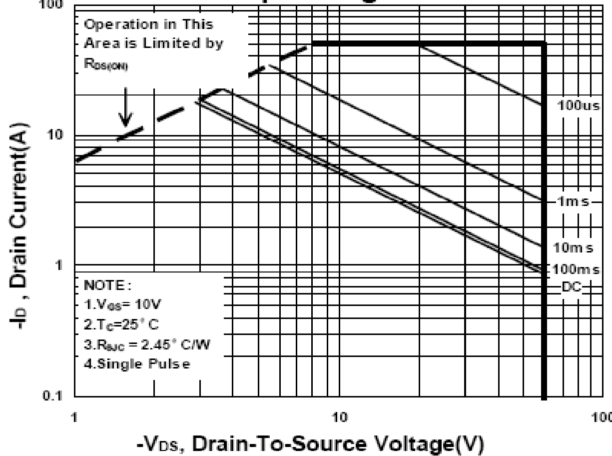

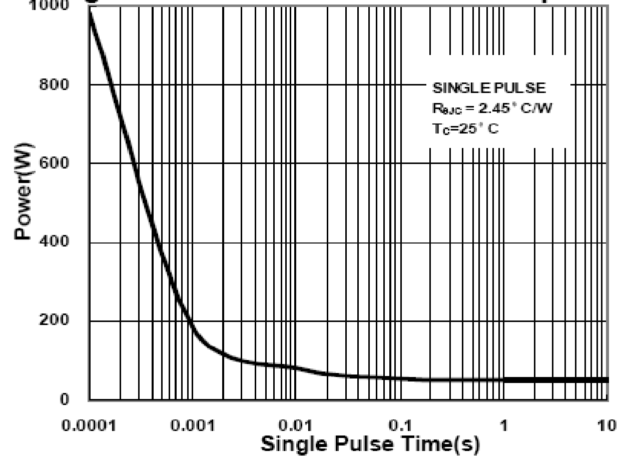

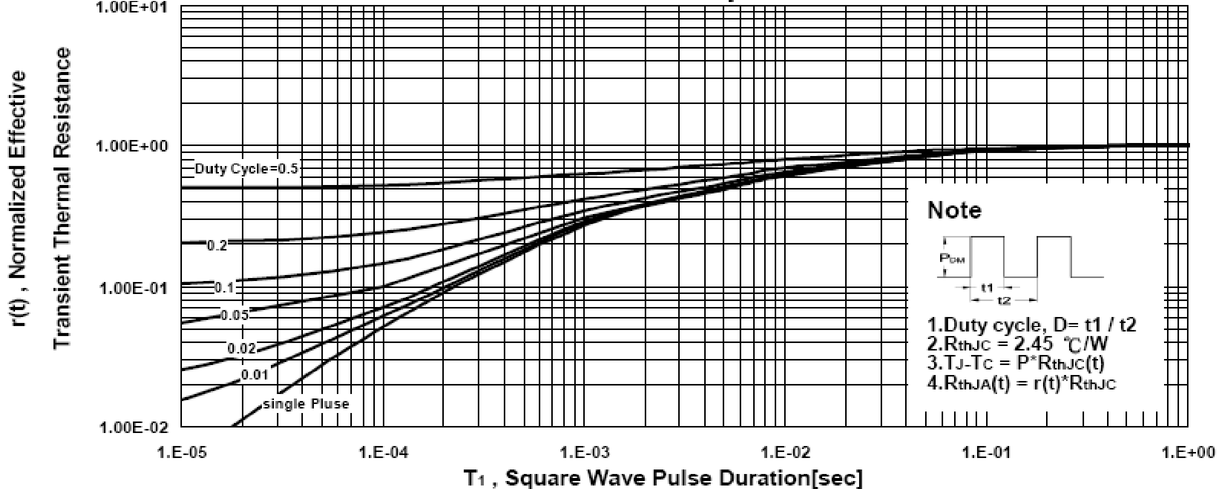

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Package Dimension

TO-251 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	14	15	17.14	H	0.89		1.7
B	2.1	2.3	2.5	I	6.3		6.8
C	0.4	0.5	0.6	J	4.8		5.5
D	0.35	0.5	0.65	K	0.5	0.84	1.14
E	0.9	1.1	1.5	L	0.4	0.76	0.912
F	7		9.65	M		2.3	
G	5.3		6.22	N	1.4	2.16	2.23