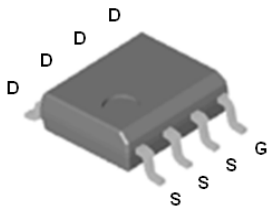
UNIKC Semiconductor

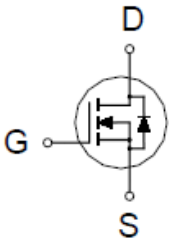
P8010BV

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	85mΩ @V_{GS} = 10V	3.5A





SOP-8

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	3.5	A
	T_A = 70 °C		2.8	
Pulsed Drain Current[1]		I_{DM}	20	
Avalanche Current		I_{AS}	12	
Avalanche Energy	L =0.1mH	E_{AS}	7.2	mJ
Power Dissipation	T_A = 25 °C	P_D	2.4	W
	T_A = 70 °C		1.5	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		25	°C / W
Junction-to-Ambient[2]	$R_{\theta JA}$		52	

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measureed with the device mounted on 1in2 FR-4 board with 2oz.Copper, in a still air environment with TA =25°C.The value in any given application depends on the user's specific board design.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.8	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 3A		69	95	mΩ
		V_{GS} = 10V , I_D = 3A		54	85	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 3A		12		S
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	20			A
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		532		pF
Output Capacitance	C_{oss}			69		
Reverse Transfer Capacitance	C_{rss}			31		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.6		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 50 V, V_{GS} = 10V, I_D = 3A		13.8		nC
Gate-Source Charge[2]	Q_{gs}			2.2		
Gate-Drain Charge[2]	Q_{gd}			5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V, $I_D \cong$ 3A, V_{GS} = 10V, R_{GEN} = 6Ω		20		nS
Rise Time[2]	t_r			30		
Turn-Off Delay Time[2]	$t_{d(off)}$			50		
Fall Time[2]	t_f			35		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				3.5	A
Forward Voltage[1]	V_{SD}	I_F = 3A, V_{GS} = 0V			1.1	V
Reverse Recovery Time	t_{rr}	I_F = 3A, dI_F/dt = 100A / μS		29		nS
Reverse Recovery Charge	Q_{rr}			27		nC

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

[2]Independent of operating temperature.

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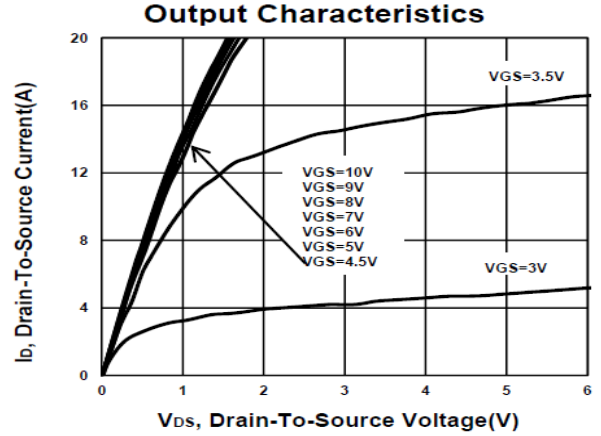
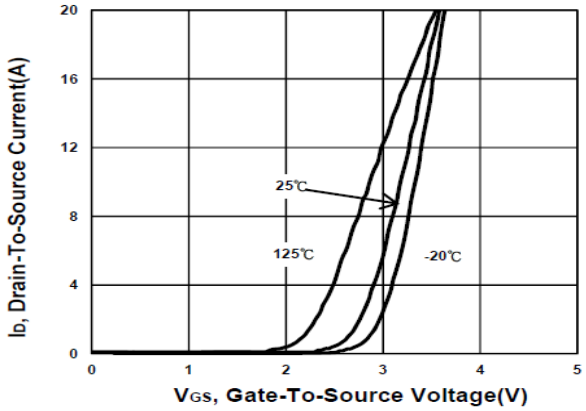
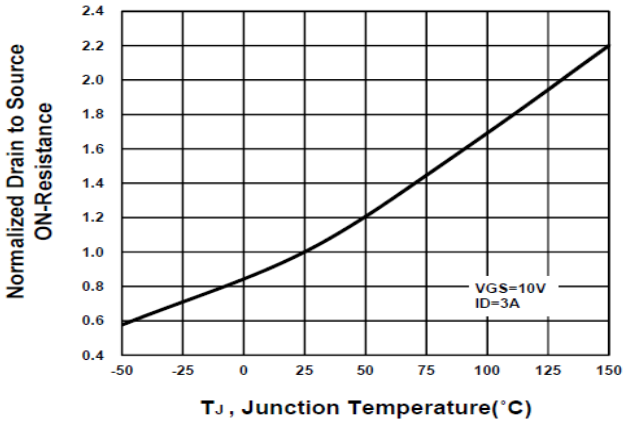
Output Characteristics



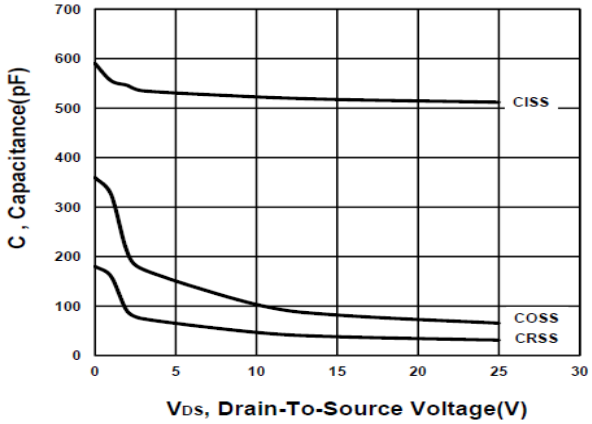
Transfer Characteristics



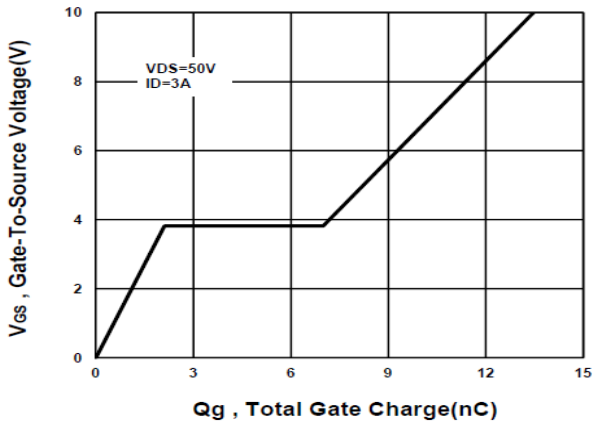
On-Resistance VS Temperature



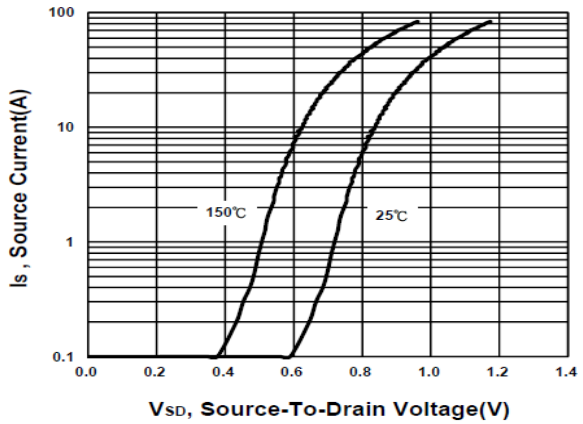
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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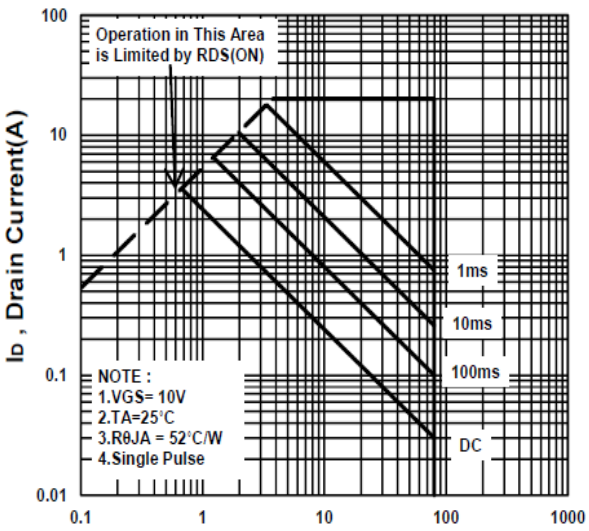
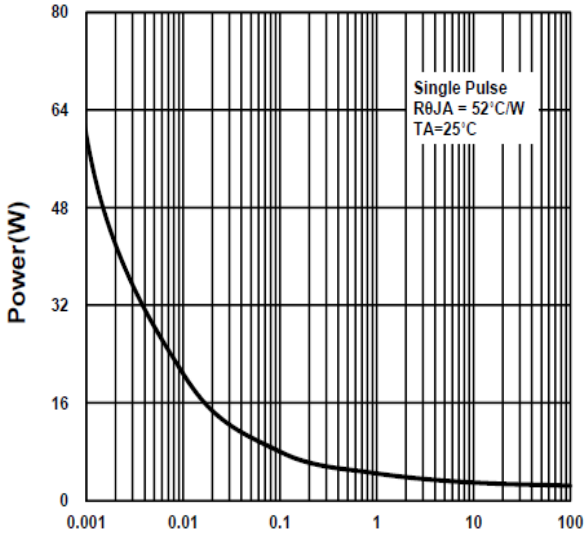
Safe Operating Area



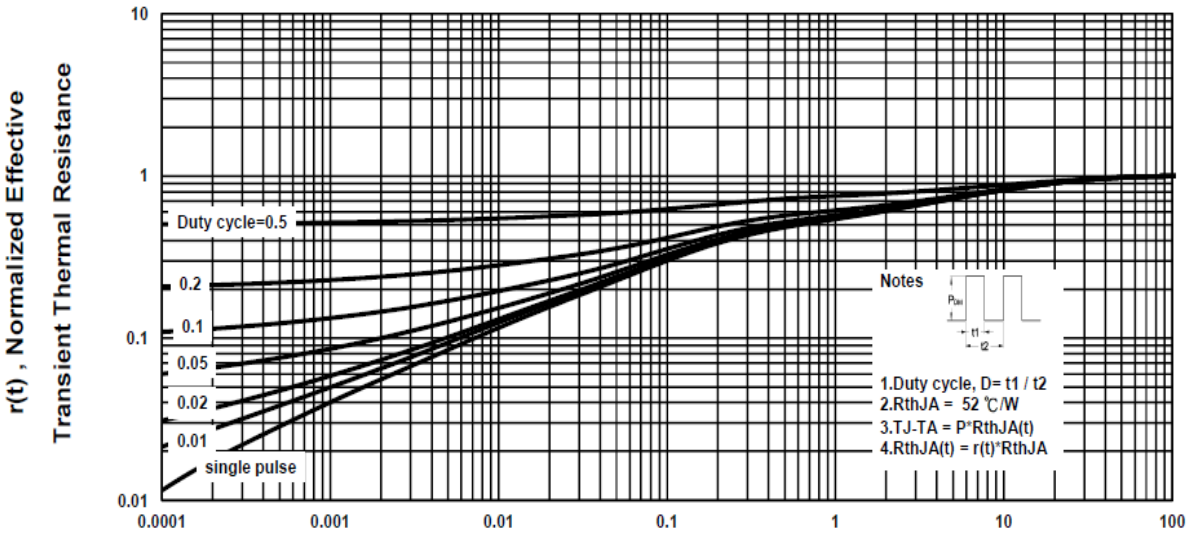
VDS, Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T1 , Square Wave Pulse Duration[sec]

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SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.4	0.6	0.93
B	3.8	3.9	4.0	I	0.19	0.21	0.25
C	5.79	6.0	6.2	J	0.25	0.375	0.5
D	0.33	0.4	0.51	K	0°	3°	18°
E	1.25	1.27	1.29				
F	1.1	1.3	1.65				
G	0.05	0.15	0.25