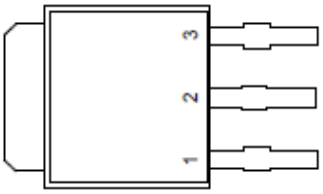
UNIKC Semiconductor

P8010BIS

N-Channel Enhancement Mode MOSFET

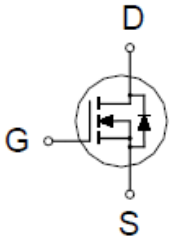
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	85mΩ @V_{GS} = 10V	15A



1.GATE
2.DRAIN
3.SOURCE

TO-251(IS)



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	
Continuous Drain Current	T_C = 25 °C	I_D	15	A
	T_C = 100 °C		9	
Pulsed Drain Current[1]		I_{DM}	35	
Avalanche Current		I_{AS}	12	
Avalanche Energy	L = 0.1mH	E_{AS}	7.2	mJ
Power Dissipation	T_C = 25 °C	P_D	46	W
	T_C = 100 °C		18	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.7	°C / W

[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			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	1.3	1.8	2.3	
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 = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	35			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 10A		67	95	mΩ
		V_{GS} = 10V, I_D = 15A		61	85	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 15A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		527		pF
Output Capacitance	C_{oss}			68		
Reverse Transfer Capacitance	C_{rss}			37		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge[2]	Q_g	V_{GS} = 10V, V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 15A		18.5		nC
Gate-Source Charge[2]	Q_{gs}			2.7		
Gate-Drain Charge[2]	Q_{gd}			5.1		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 40V, I_D ≅ 15A, V_{GS} = 10V, R_{GEN} =6Ω		11		nS
Rise Time[2]	t_r			48		
Turn-Off Delay Time[2]	$t_{d(off)}$			80		
Fall Time[2]	t_f			73		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				15	A
Forward Voltage[1]	V_{SD}	I_F = 15A, V_{GS} = 0V			1.1	V
Reverse Recovery Time	t_{rr}	I_F = 15A, dI_F/dt = 100A / μS		33		nS
Reverse Recovery Charge	Q_{rr}			35		nC

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

[2]Independent of operating temperature.

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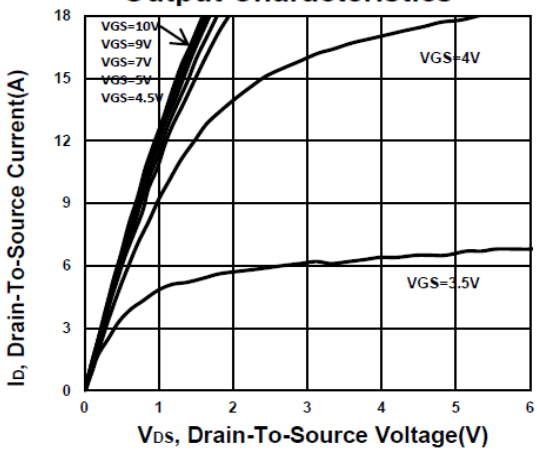
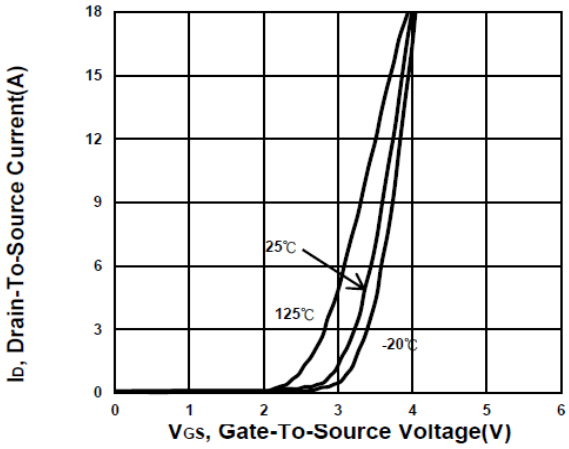
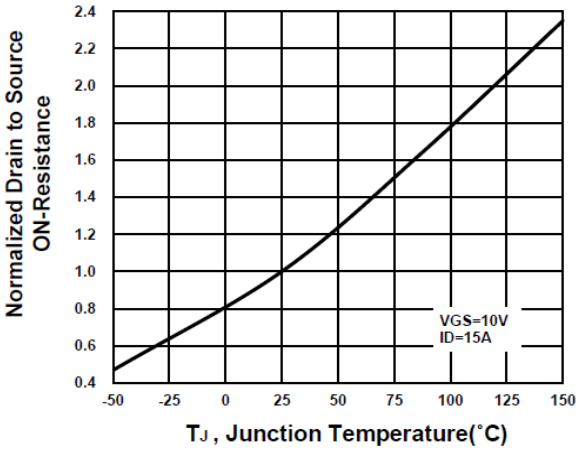
Output Characteristics



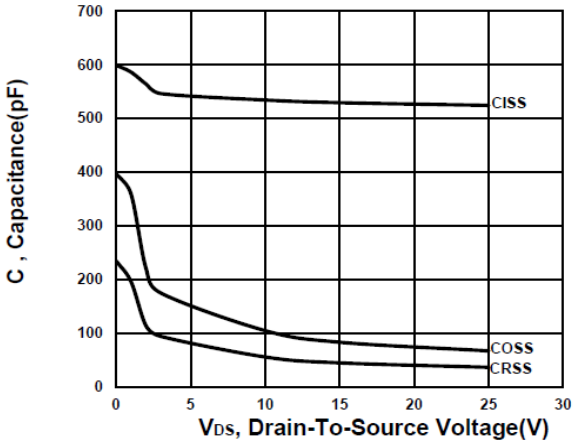
Transfer Characteristics



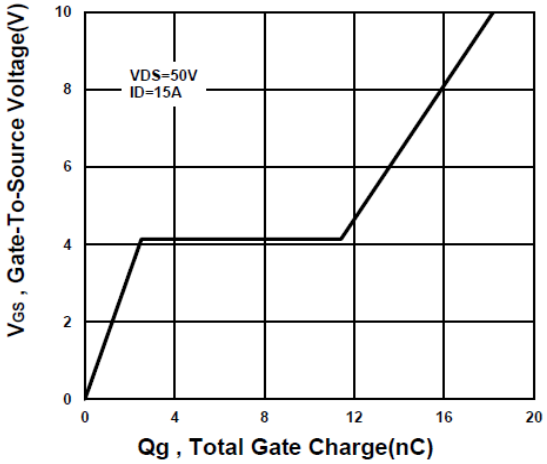
On-Resistance VS Temperature



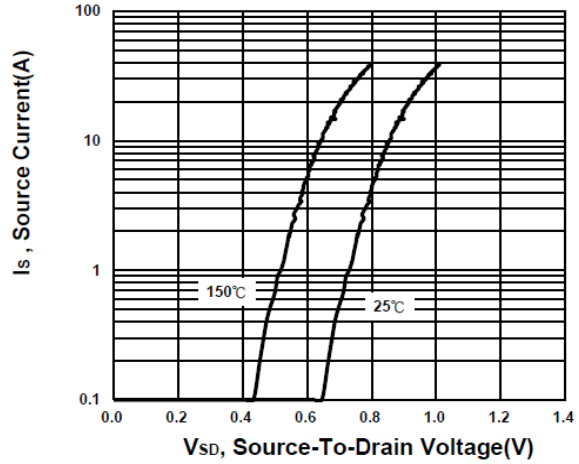
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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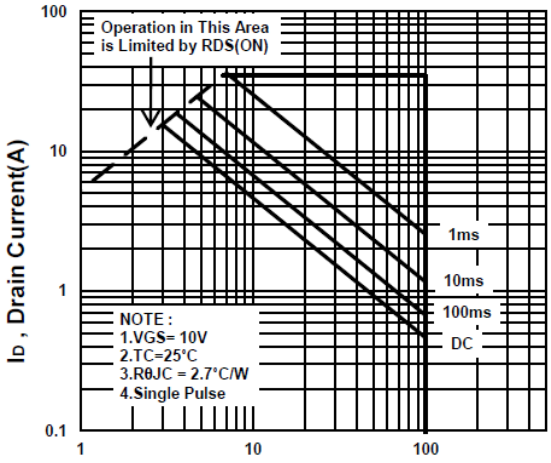
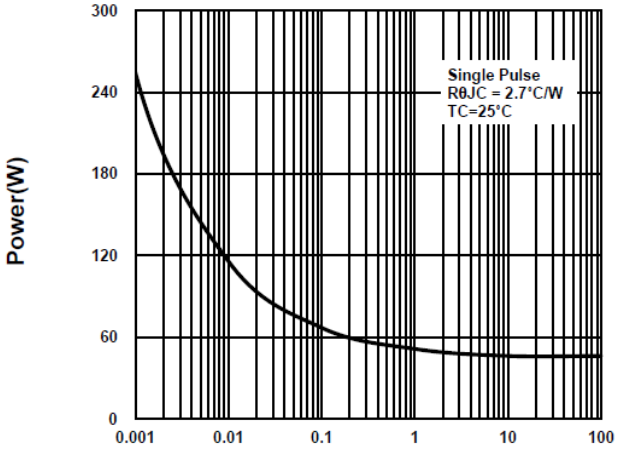
Safe Operating Area



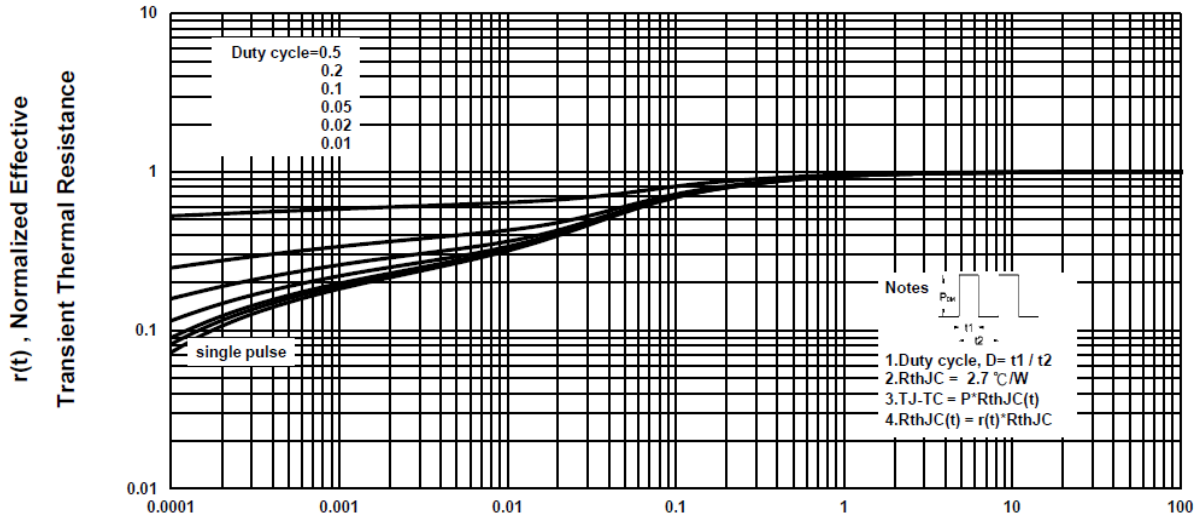
VDS, Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T1 , Square Wave Pulse Duration[sec]

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Package Dimension

TO-251 (IS) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	6.3	6.6	6.8	H	2.1	2.3	2.5
B	4.8	5.3	5.5	J	0.4	0.5	0.6
C	6.7		7.57	K	0.35	0.5	0.65
D	3	3.5	4.5	L	0.9		1.5
E		2.3		M	5.3		6.22
F	0.6	0.9	1.1	N	1.4	1.6	2.1
G	0.4		0.89