UNIKC Semiconductor

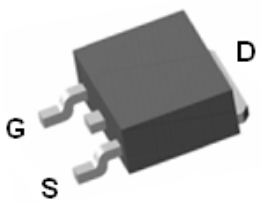
RoHS Compliant

P8315AD

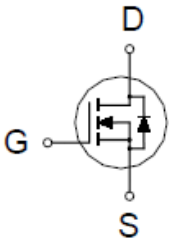
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
150V	83mΩ @V_{GS} = 10V	20A



TO-252



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C = 25 °C	I_D	20	A
	T_C = 100 °C		12	
Pulsed Drain Current[1]		I_{DM}	50	
Avalanche Current		I_{AS}	20	
Avalanche Energy[3]		E_{AS}	220	mJ
Power Dissipation	T_C = 25 °C	P_D	73	W
	T_C = 100 °C		29	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$		50	°C / W
Junction-to-Case	$R_{\theta JC}$		1.7	

[1]Pulse width limited by maximum junction temperature.

[2]The value of R_{qJA} is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

[3]Starting T_j =25 °C,I_{AS}=20A,L=1.1mH,V_{DD}=50V.

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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	150			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3.1	4	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 120V, V_{GS} = 0V			1	μA
		V_{DS} = 100V, V_{GS} = 0V, T_J = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 7V, I_D = 10A		74	88	mΩ
		V_{GS} = 10V, I_D = 10A		70	83	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 10A		22		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1320		pF
Output Capacitance	C_{oss}			169		
Reverse Transfer Capacitance	C_{rss}			42		
Total Gate Charge[2]	Q_g	V_{GS} = 10 V, V_{DS} = 75V, I_D = 10A		42		nC
Gate-Source Charge[2]	Q_{gs}			8		
Gate-Drain Charge[2]	Q_{gd}			21		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 75V, $I_D \cong$ 10A, V_{GS} = 10V, R_{GS}= 6Ω		14		nS
Rise Time[2]	t_r			50		
Turn-Off Delay Time[2]	$t_{d(off)}$			48		
Fall Time[2]	t_f			38		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				20	A
Forward Voltage[1]	V_{SD}	I_F = 10A, V_{GS} = 0V			1.6	V
Reverse Recovery Time	t_{rr}	I_F = 10A, dI_F/dt = 100A / μS		122		nS
Reverse Recovery Charge	Q_{rr}			584		nC

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

[2]Independent of operating temperature.

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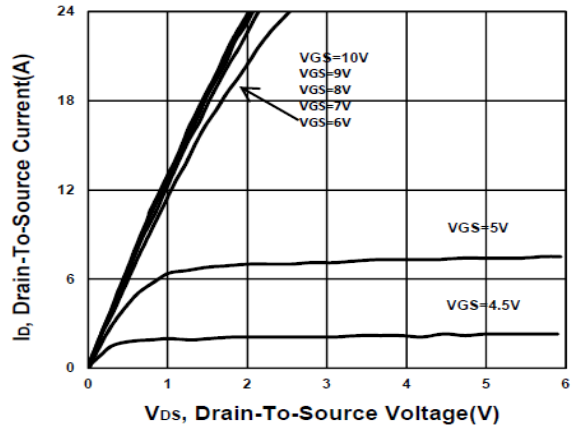
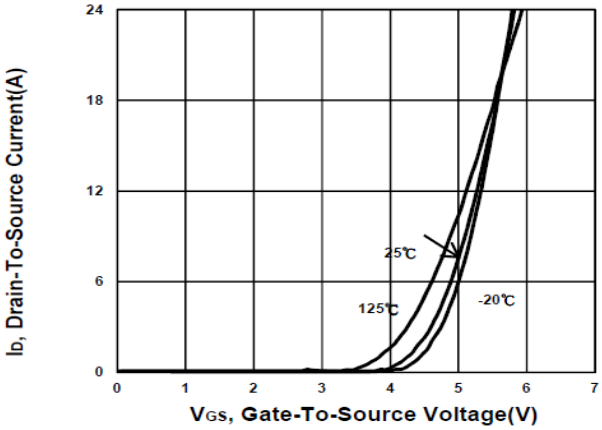
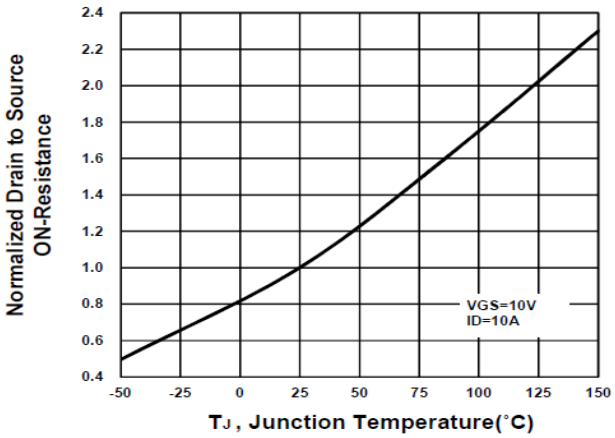
Output Characteristics



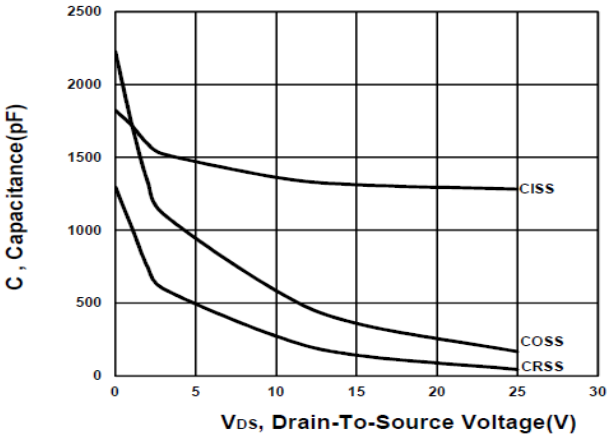
Transfer Characteristics



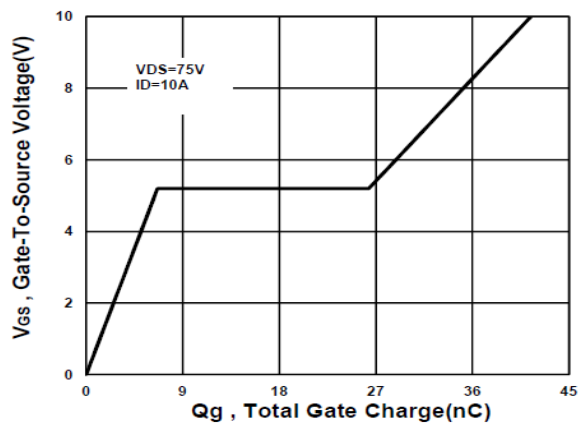
On-Resistance VS Temperature



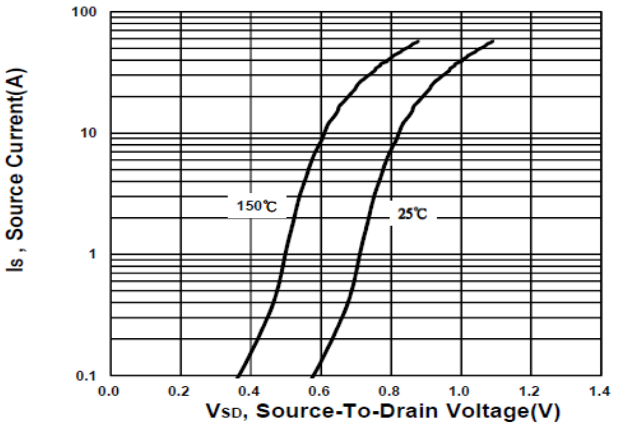
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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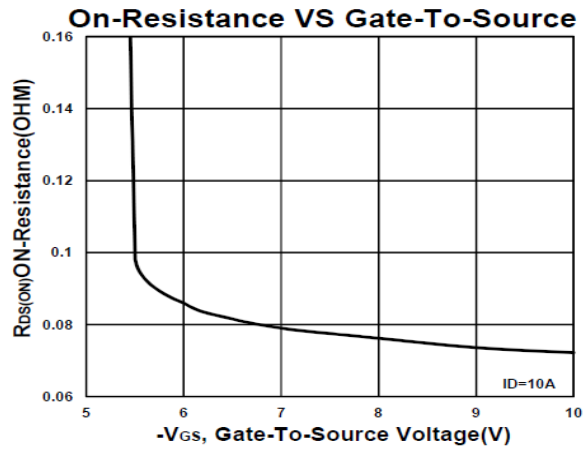

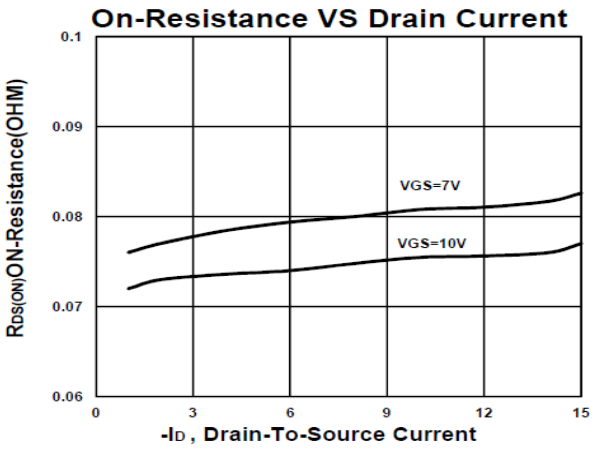

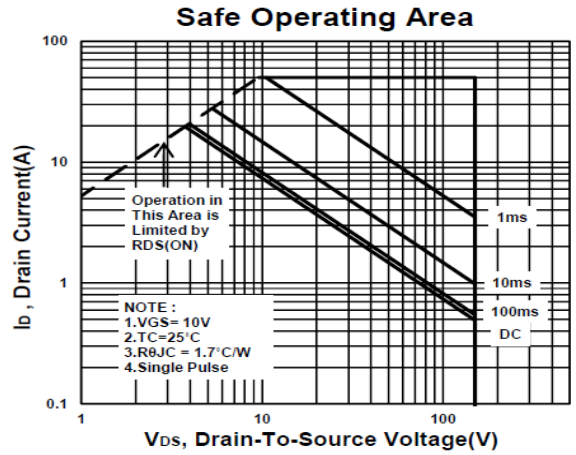

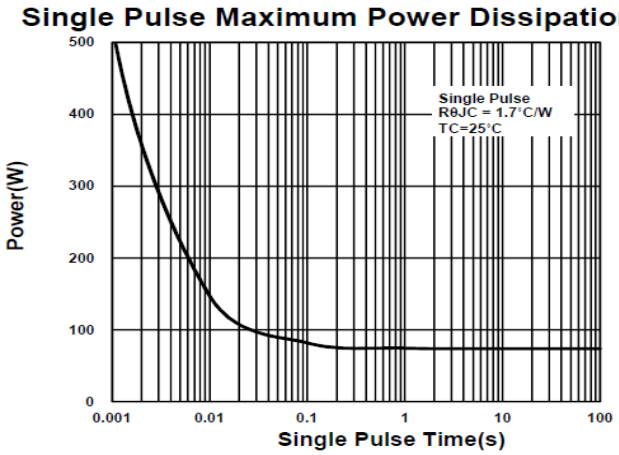

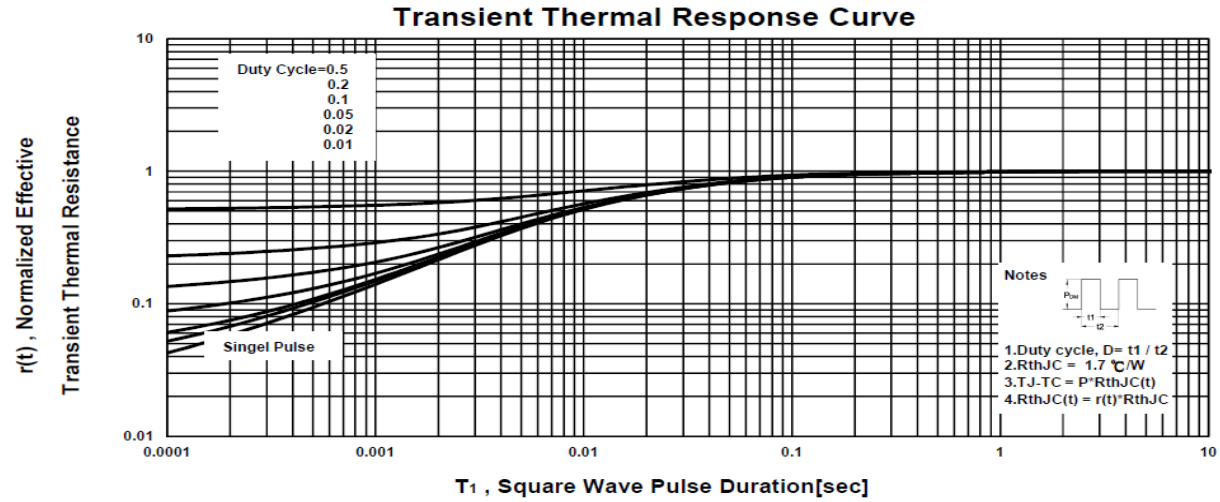

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Package Dimension

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