UNIKC Semiconductor

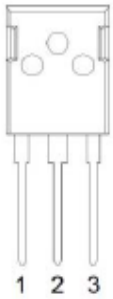
RoHS Compliant

P0990AU

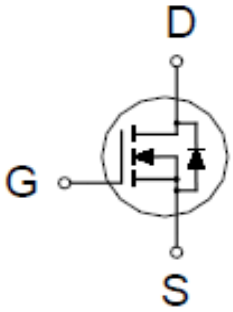
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
900V	1.3Ω @V_{GS} = 10V	9A



1: GATE
2: DRAIN
3: SOURCE



TO-247

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	900	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C= 25 °C	I_D	9	A
	T_C= 100 °C		5.6	
Pulsed Drain Current[1]		I_{DM}	36	
Avalanche Current		I_{AS}	6	
Avalanche Energy	L = 10mH	E_{AS}	180	mJ
Power Dissipation	T_C= 25 °C	P_D	250	W
	T_C= 100°C		100	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		50	°C / W
Junction-to-Case	$R_{\theta JC}$		0.5	

[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	900			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3.3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Gate Voltage Drain Current	I_{DSS}	V_{DS} = 900V, V_{GS} = 0V			1	μA
		V_{DS} =720V, V_{GS} = 0V, T_J = 125°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} =10V, I_D = 4.5A		1	1.3	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} =10V, I_D =4.5A		7.7		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		3137		pF
Output Capacitance	C_{oss}			197		
Reverse Transfer Capacitance	C_{rss}			7		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		4.3		Ω
Total Gate Charge[2]	Q_g	V_{GS} = 0V , V_{DS} = 720V , I_D =9A		62		nC
Gate-Source Charge[2]	Q_{gs}			20		
Gate-Drain Charge[2]	Q_{gd}			18		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 450V , I_D ≅ 9A, V_{GS} = 10V, R_{GEN} =25Ω		58		nS
Rise Time[2]	t_r			104		
Turn-Off Delay Time[2]	$t_{d(off)}$			150		
Fall Time[2]	t_f			78		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				9	A
Forward Voltage[1]	V_{SD}	I_F = 9A, V_{GS} = 0V			1.4	V
Reverse Recovery Time	t_{rr}	I_F = 9A, dI/dt = 100A / μS		734		nS
Reverse Recovery Charge	Q_{rr}			8		μC

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

[2]Independent of operating temperature.

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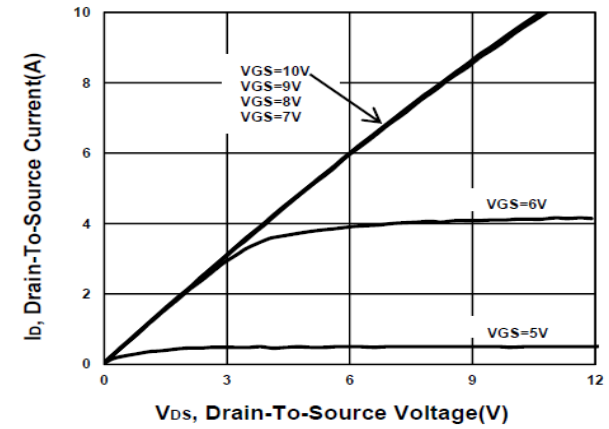
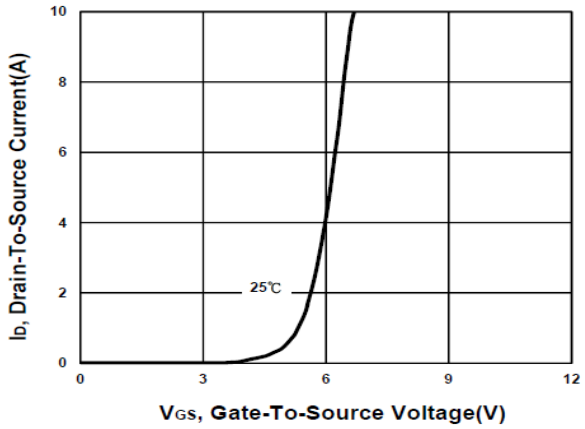
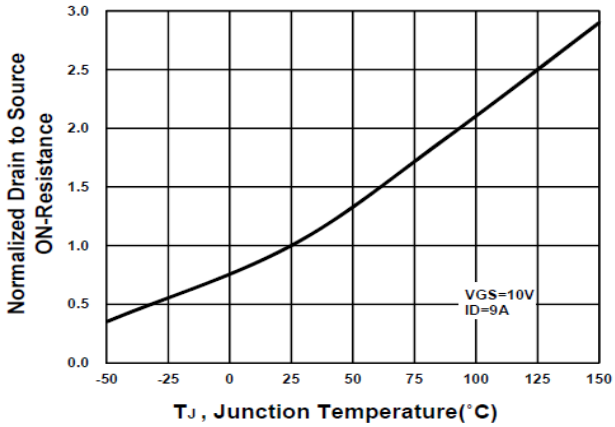
Output Characteristics



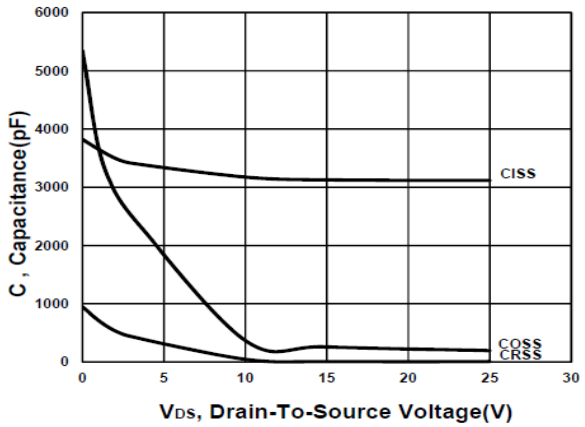
Transfer Characteristics



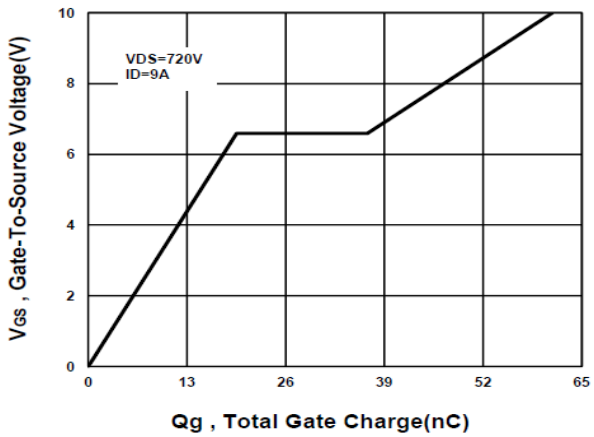
On-Resistance VS Temperature



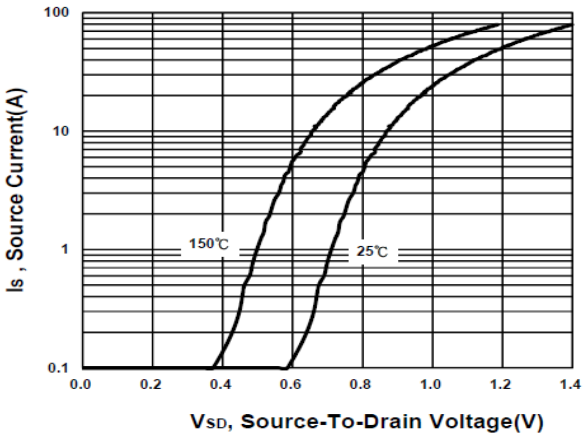
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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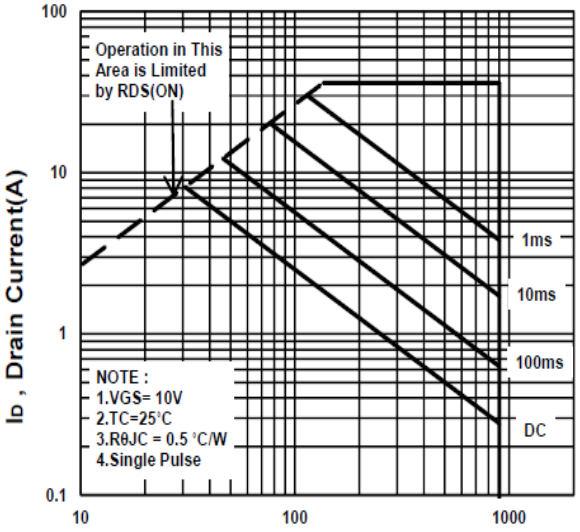
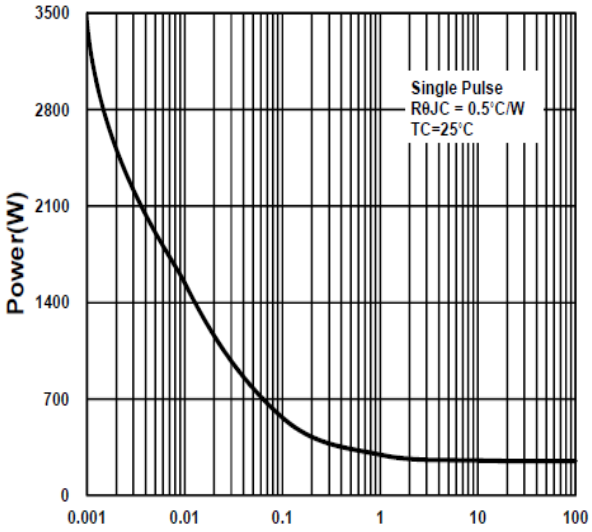
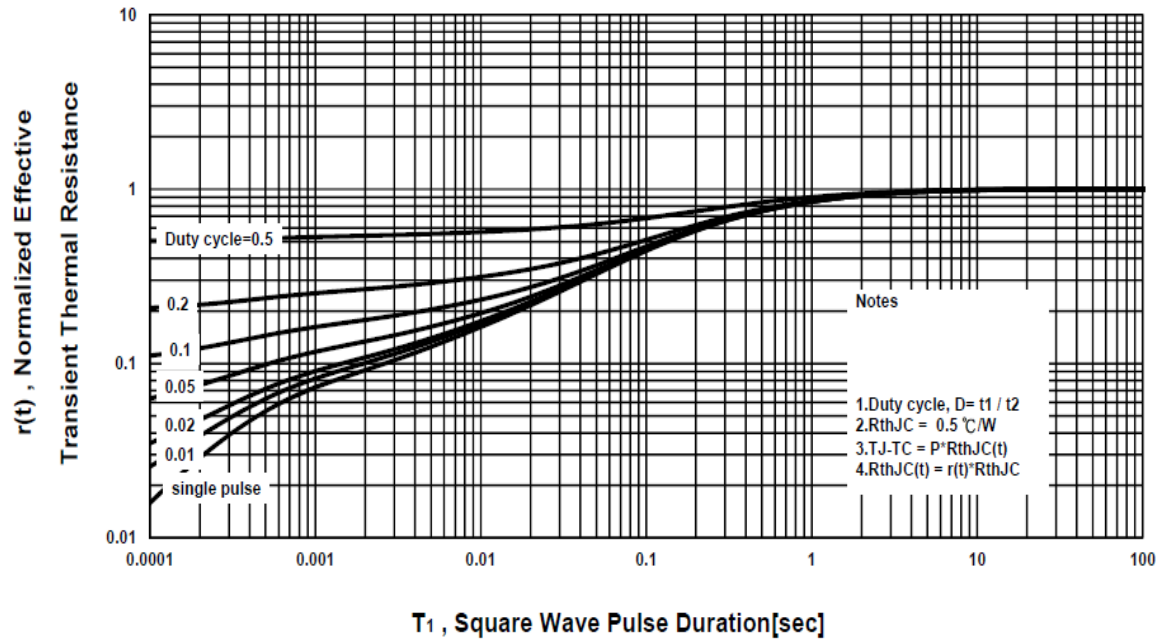
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-247 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	15.45	15.6	15.75	I		3.5	
B	20.3	20.45	20.6	J		3.6	
C	24.8	24.95	25.1	K		5.45	
D	40.9	41.1	41.3	L	7.1	7.2	7.3
E		5.98		M	1.9	2	2.1
F	1.8	2	2.2	N	2.2	2.4	2.6
G	2.8	3	3.2	O	0.5	0.6	0.7
H	1	1.2	1.4	P	4.85	5	5.15