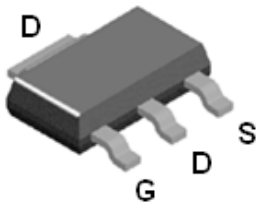
UNIKC Semiconductor

P3055LLG

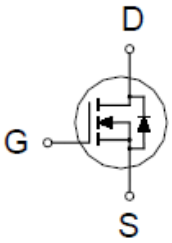
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
25V	72mΩ @V_{GS} = 10V	6A



SOT- 223



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	T_A = 25 °C	I_D	6	A
	T_A = 70 °C		3.3	
Pulsed Drain Current[2]		I_{DM}	21	
Avalanche Current		I_{AS}	12	
Avalanche Energy	L = 0.1mH	E_{AS}	7.5	mJ
Power Dissipation	T_A = 25 °C	P_D	3	W
	T_A = 70 °C		1.1	
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	$R_{\theta Jc}$		12	°C / W
Junction-to-Ambient	$R_{\theta JA}$		42	

[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	25			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.8	1.5	2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V , T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	21			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 3A		53	96	mΩ
		V_{GS} = 10V, I_D = 6A		35	72	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 6A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		220		pF
Output Capacitance	C_{oss}			114		
Reverse Transfer Capacitance	C_{rss}			72		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 6A, V_{GS} = 10V		5.7		nC
Gate-Source Charge[2]	Q_{gs}			0.8		
Gate-Drain Charge[2]	Q_{gd}			1.7		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V, I_D ≅ 6A, V_{GS} = 10V, R_{GS} = 6Ω		10		nS
Rise Time[2]	t_r			22		
Turn-Off Delay Time[2]	$t_{d(off)}$			22		
Fall Time[2]	t_f			8		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				2	A
Forward Voltage[1]	V_{SD}	I_F = 6A, V_{GS} = 0V			1.5	V
Reverse Recovery Time	t_{rr}	I_F = 6A, dI/dt = 100A / μS V_{GS} = 0V		30		nS
Reverse Recovery Charge	Q_{rr}			12		μC

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

[2]Independent of operating temperature.

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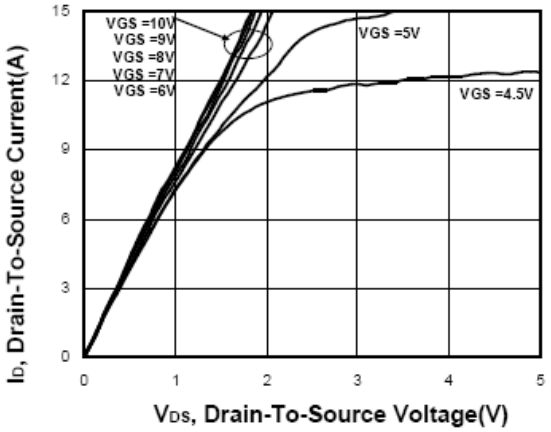
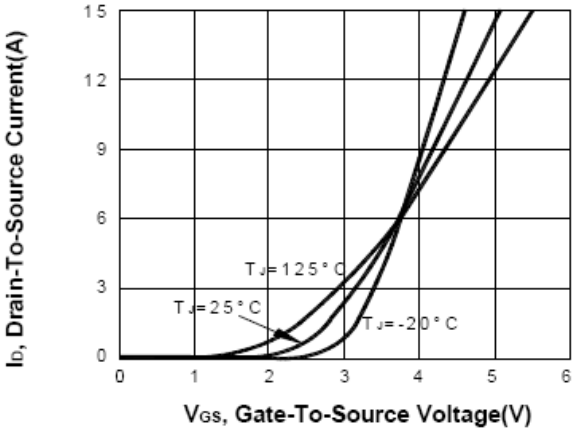
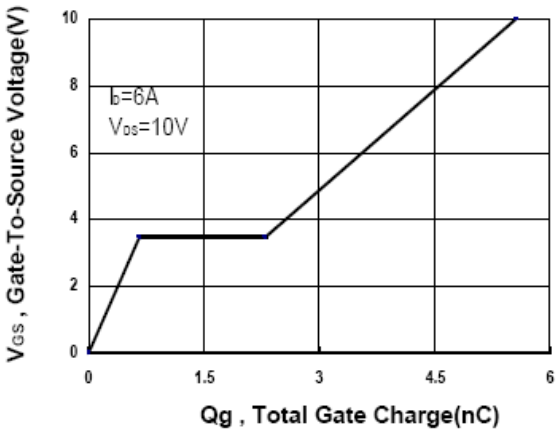
Output Characteristics



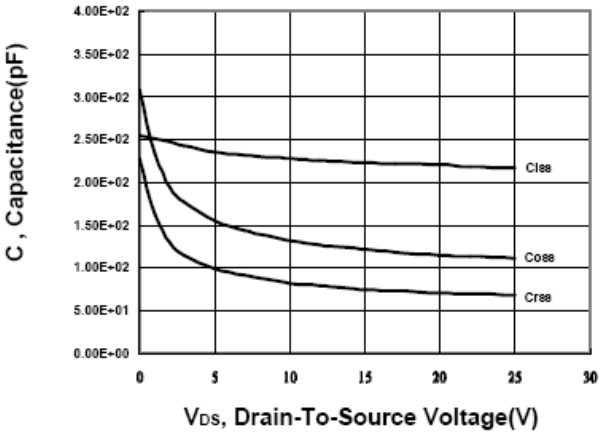
Transfer Characteristics



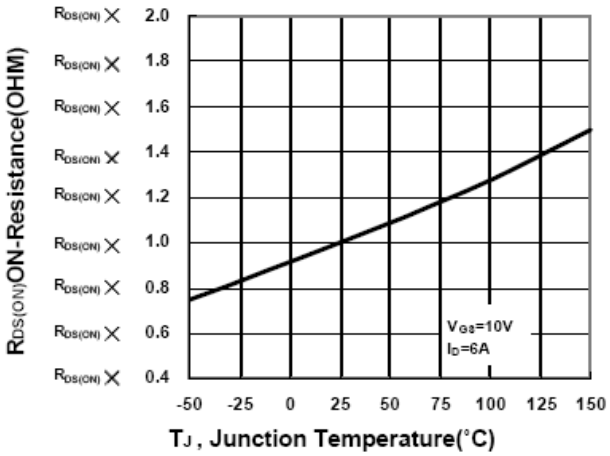
Gate charge Characteristics



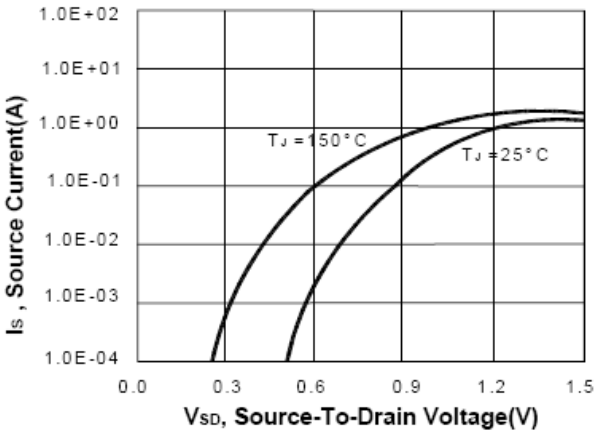
Capacitance Characteristic



On-Resistance VS Temperature



Source-Drain Diode Forward Voltage



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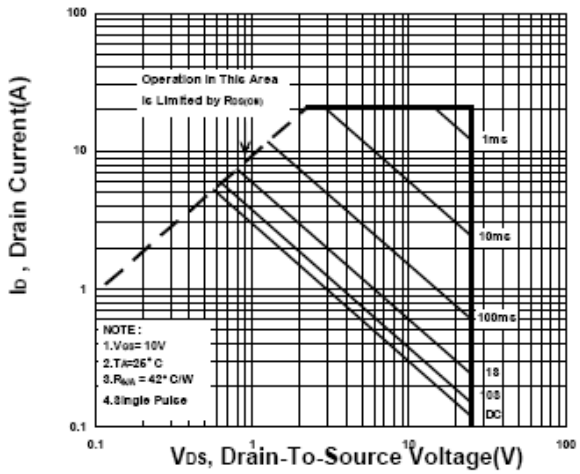
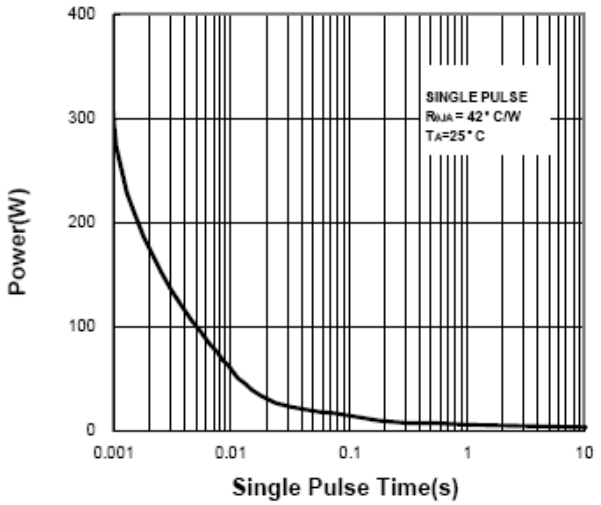
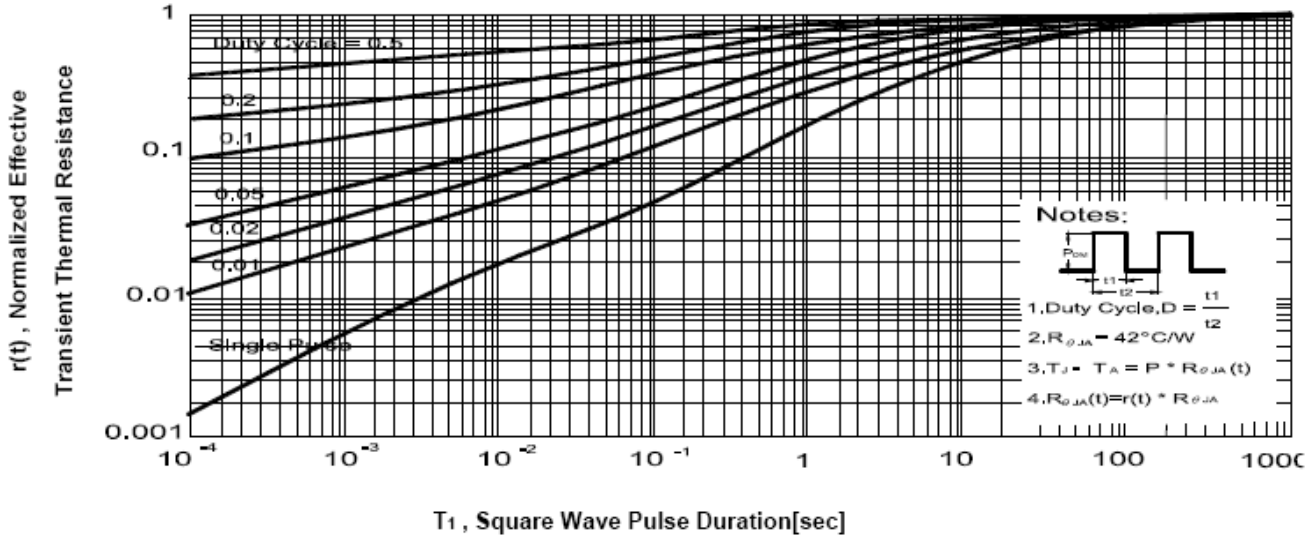
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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SOT-223 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.60	0.76	0.84	H	3.30	3.50	3.70
B	6.70	7.00	7.30	I	0.50	1.00	1.20
C	2.85	3.00	3.10	J	0.23	0.3	0.4
D	2.25	2.30	2.35	K	0°		10°
E	4.35	4.60	4.85	L	0	0.1	0.2
F	1.40	1.60	1.80	M			
G	6.30	6.50	6.80	N