UNIKC Semiconductor

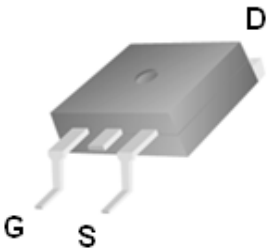
RoHS Compliant

P6015CSG

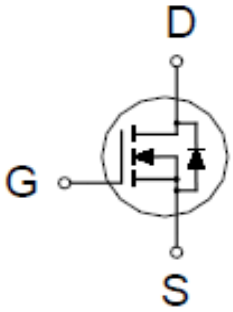
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
150V	60mΩ @V_{GS} = 10V	21A



TO-263



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}	±12	V
Continuous Drain Current[2]	T_C= 25 °C	I_D	21	A
	T_C= 100 °C		13	
Pulsed Drain Current[1, 2]		I_{DM}	60	
Avalanche Current[3]		I_{AS}	16	
Avalanche Energy[3]		E_{AS}	128	mJ
Power Dissipation	T_C= 25 °C	P_D	68	W
	T_C= 100°C		27	
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	$R_{\theta JC}$		1.82	°C / W
Junction-to-Ambient	$R_{\theta JA}$		50	

[1]Pulse width limited by maximum junction temperature.

[2]Limited only by maximum temperature allowed.

[3]V_{DD} = 50V , L = 1mH ,starting T_J = 25 ° C.

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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	0.45	0.8	1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±100	nA
Gate Voltage Drain Current	I_{DSS}	V_{DS} =120V, V_{GS} = 0V , T_C = 25 °C			1	μA
		V_{DS} =100V, V_{GS} = 0V, T_J = 100°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 15A		47	60	mΩ
		V_{GS} = 5V, I_D = 10A		48	70	
Forward Transconductance[1]	g_{fs}	V_{DS} =5V, I_D =15A		70		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		8096		pF
Output Capacitance	C_{oss}			159		
Reverse Transfer Capacitance	C_{rss}			124		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.5		Ω
Total Gate Charge[2]	Q_g	V_{DD} = 75V, I_D = 15A, V_{GS} = 10V		240		nC
Gate-Source Charge[2]	Q_{gs}			18		
Gate-Drain Charge[2]	Q_{gd}			34		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 75V,I_D = 15A, R_G= 25Ω		50		nS
Rise Time[2]	t_r			115		
Turn-Off Delay Time[2]	$t_{d(off)}$			338		
Fall Time[2]	t_f			384		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				21	A
Forward Voltage[1]	V_{SD}	I_F = 15A, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	I_F = 15A, dI_F/dt = 100A / μS		59		nS
Reverse Recovery Charge	Q_{rr}			119		nC

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

[2]Independent of operating temperature.

[3]Pulse width limited by maximum junction temperature.

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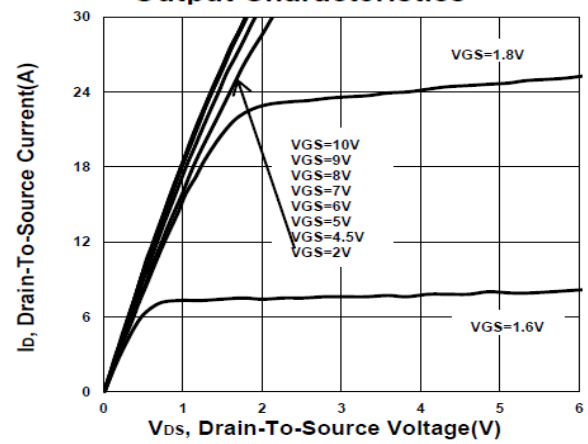
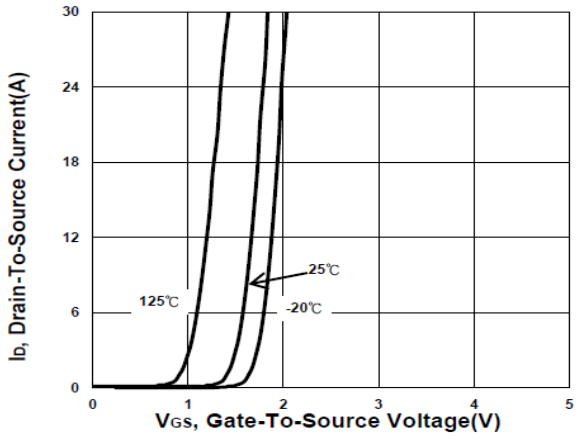
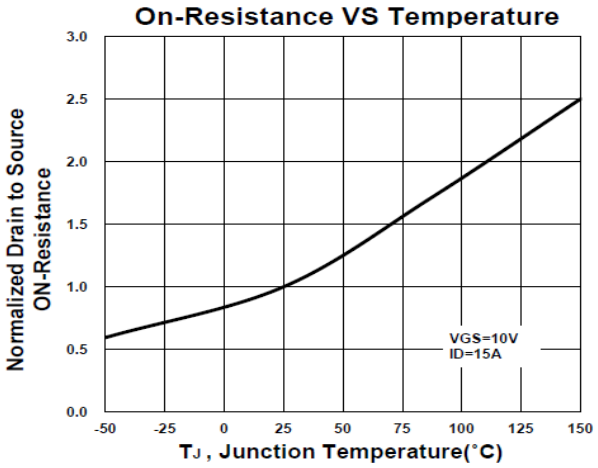
Output Characteristics



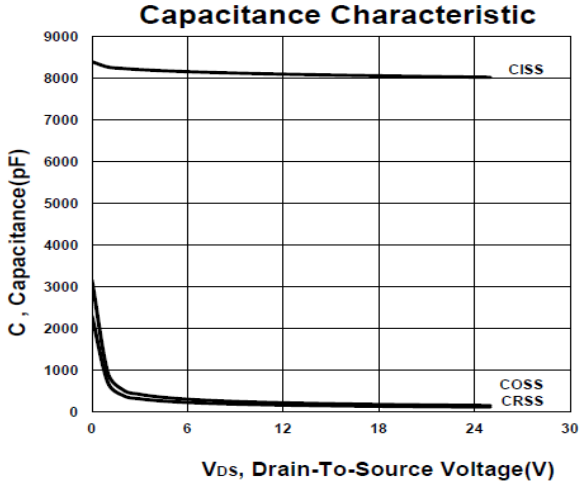
Transfer Characteristics



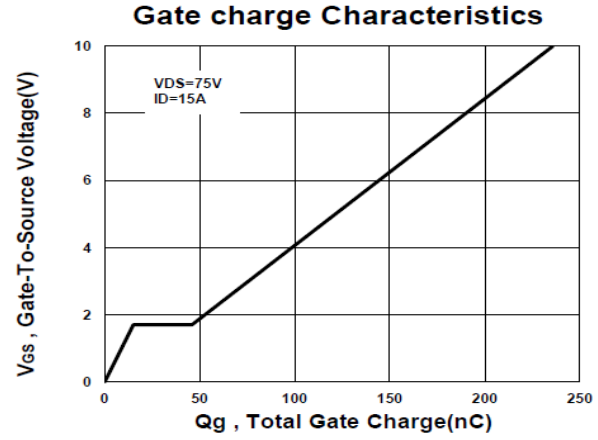
On-Resistance VS Temperature



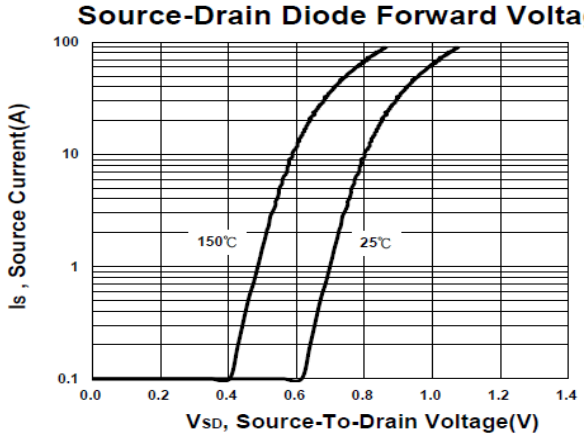
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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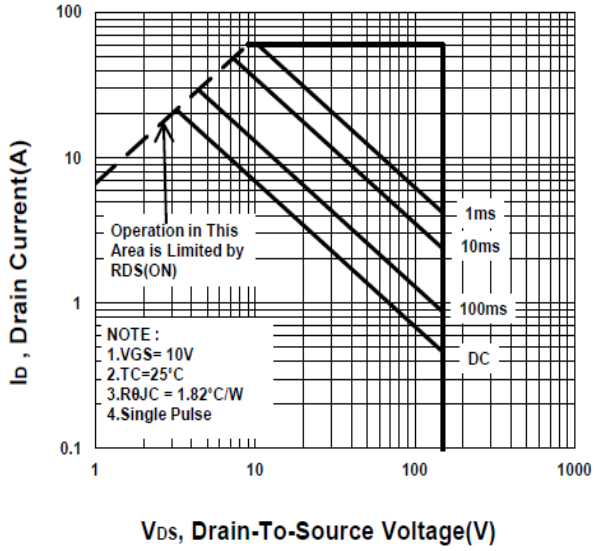
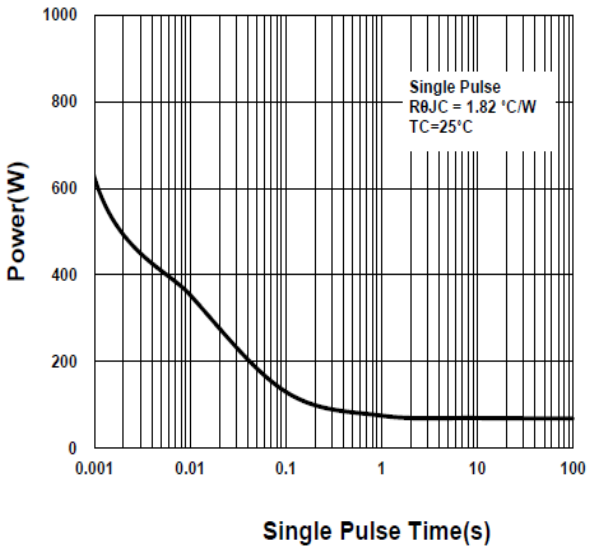
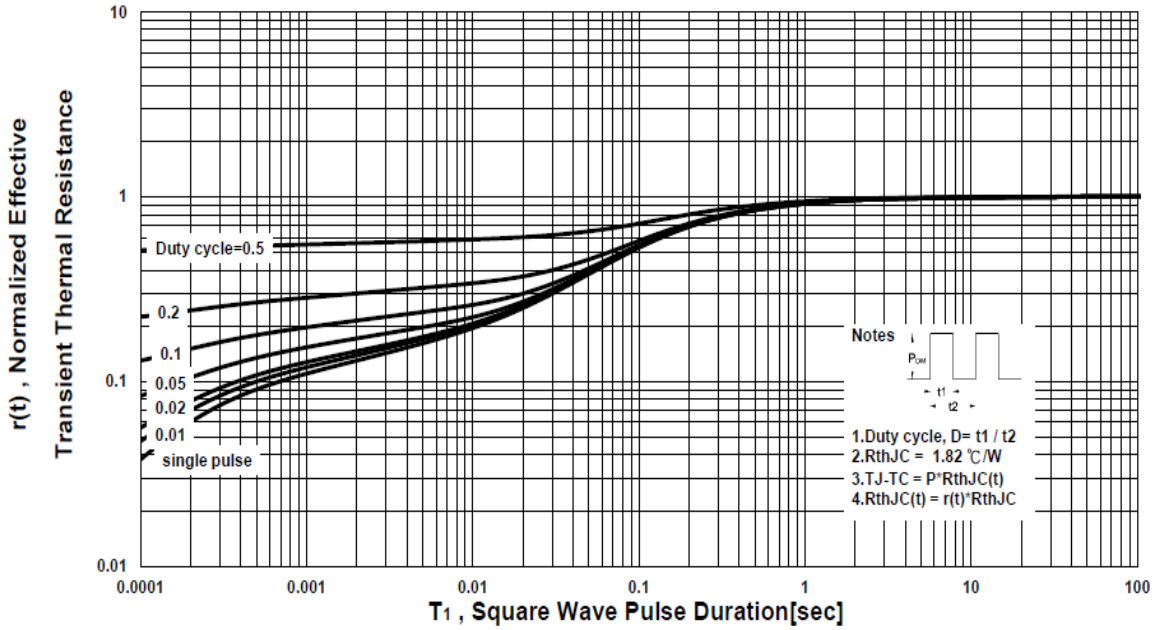
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-263 (D^2PAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.2		4.8	e	4.08	5.08	6.08
A1	0		0.3	E	9.8		10.55
b	0.71		1.06	E1	6.9		8.7
b2	1.07		1.47	H	14.2		15.8
C	0.3		0.69	L	1.2		2.79
C2	1.15		1.45	L1	1		1.65
D	8.3		9.4	L2	1.2		1.78
D1	6.37		8.23