UNIKC Semiconductor

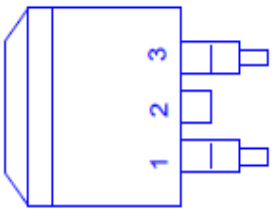
RoHS Compliant

P0465CS

N-Channel Enhancement Mode MOSFET

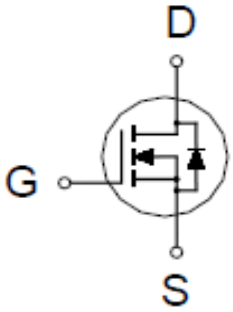
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
650V	2.6mΩ @V_{GS} = 10V	4A



1. GATE
2. DRAIN
3. SOURCE

TO-263



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C= 25 °C	I_D	4	A
	T_C= 100 °C		2.5	
Pulsed Drain Current[1]		I_{DM}	15	
Avalanche Current[2]		I_{AS}	2	
Avalanche Energy[2]		E_{AS}	20	mJ
Power Dissipation	T_C= 25 °C	P_D	71	W
	T_C= 100°C		28	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.75	°C / W

[1]Pulse width limited by maximum junction temperature.

[2] V_{DD}=50V ,L=10mH,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	650			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.3	4.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, V_{GS} = 0V			1	μA
		V_{DS} =520V, V_{GS} = 0V, T_J = 125°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 2A		2.1	2.6	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} =10V, I_D =2A		2.7		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		527		pF
Output Capacitance	C_{oss}			49		
Reverse Transfer Capacitance	C_{rss}			12		
Total Gate Charge[2]	Q_g	V_{GS} = 10V , V_{DS} = 520V , I_D = 4A		11		nC
Gate-Source Charge[2]	Q_{gs}			3.3		
Gate-Drain Charge[2]	Q_{gd}			4.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 325V, ID ≅ 4A, V_{GS} = 10V, R_{GS} = 6Ω		28		nS
Rise Time[2]	t_r			60		
Turn-Off Delay Time[2]	$t_{d(off)}$			91		
Fall Time[2]	t_f			75		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				4	A
Forward Voltage[1]	V_{SD}	I_F = 4A, V_{GS} = 0V			1	V
Reverse Recovery Time	t_{rr}	I_F = 4A, dI_F/dt = 100A / μS		367		nS
Reverse Recovery Charge	Q_{rr}			2.1		μC

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

[2]Independent of operating temperature.

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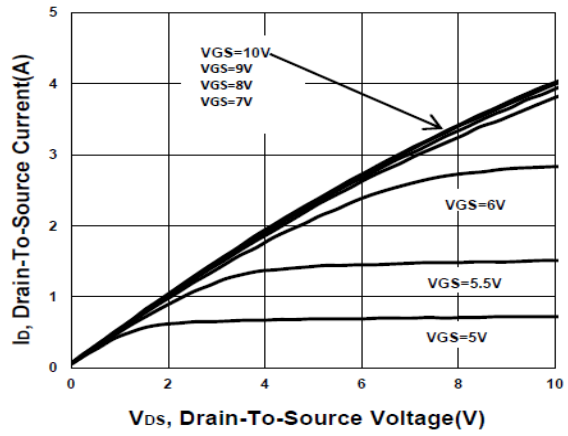
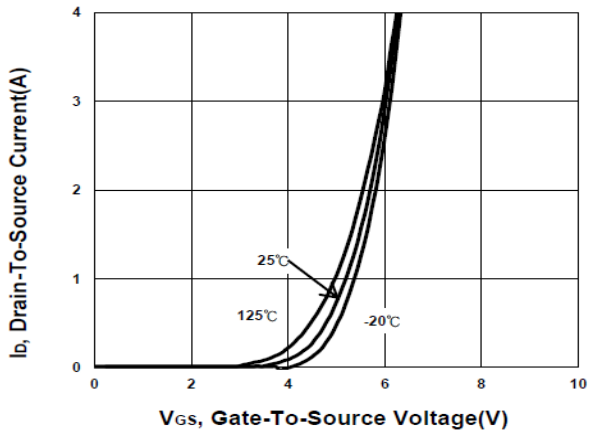
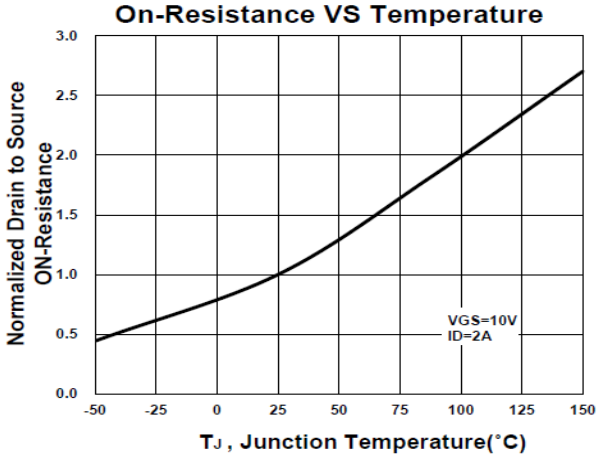
Output Characteristics



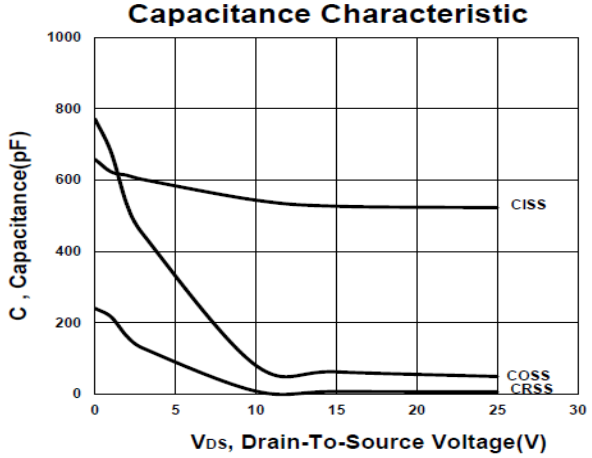
Transfer Characteristics



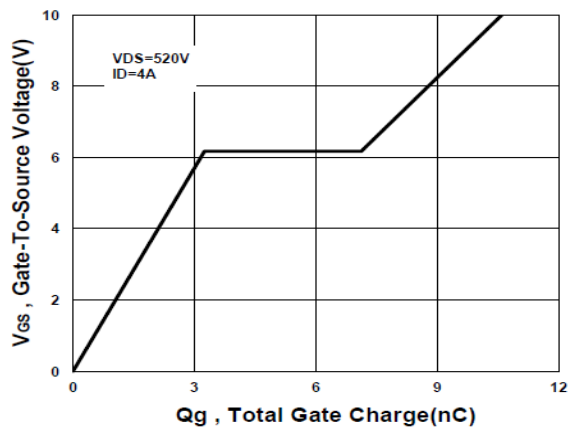
On-Resistance VS Temperature



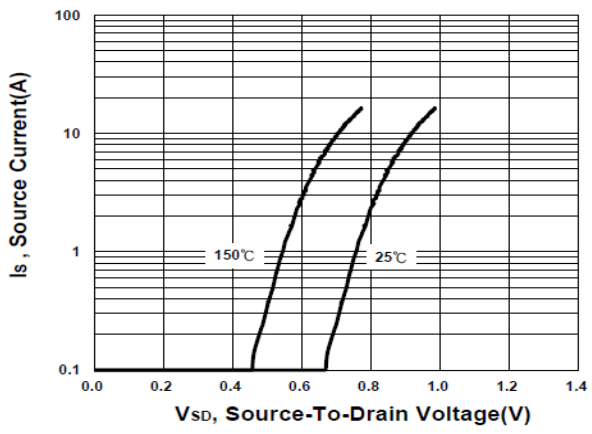
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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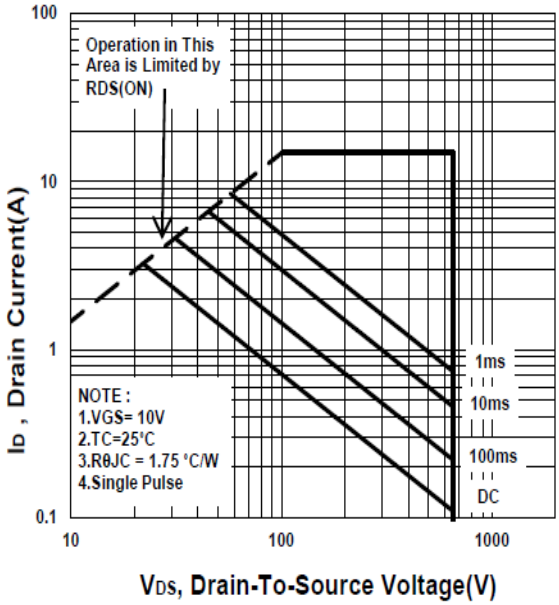
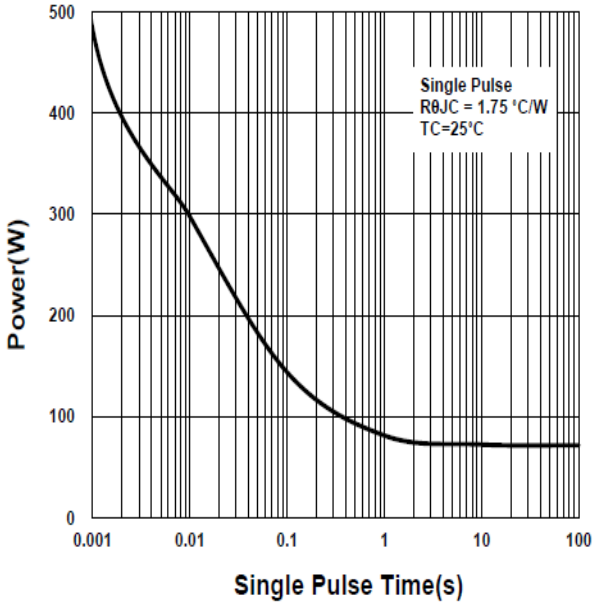
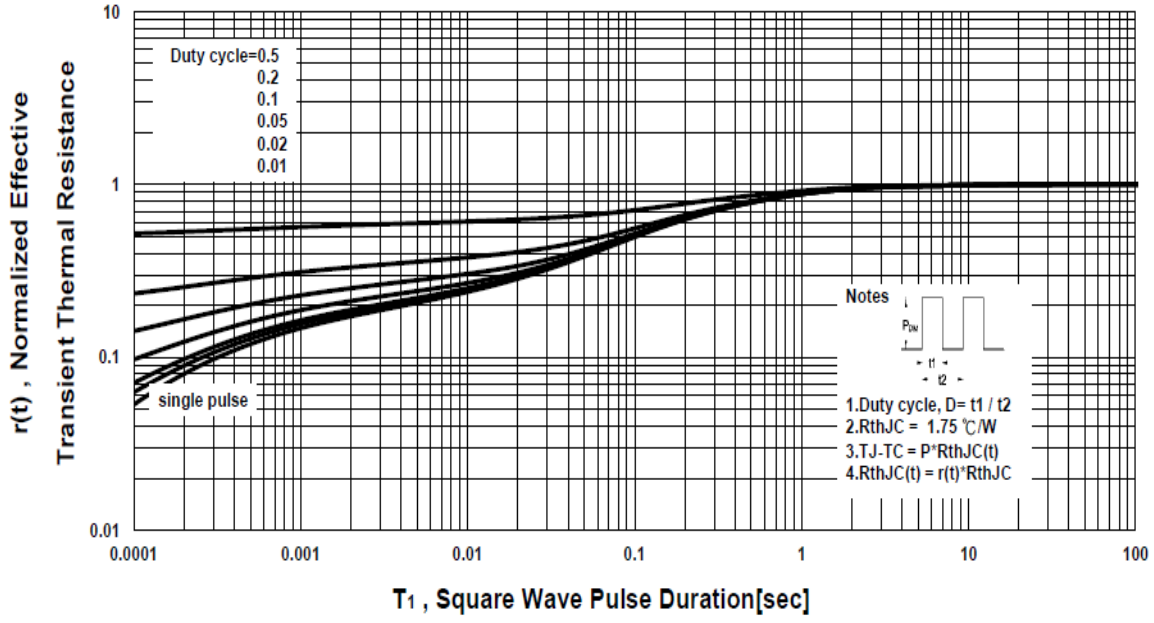
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-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