UNIKC Semiconductor

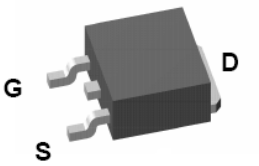
RoHS Compliant

P0603BD

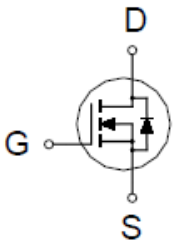
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	5.8mΩ @V_{GS} = 10V	70A



TO-252



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25 °C	I_D	70	A
	T_C = 100 °C		44	
Pulsed Drain Current[1]		I_{DM}	180	
Avalanche Current		I_{AS}	49	
Avalanche Energy	L = 0.1mH	E_{AS}	120	mJ
Power Dissipation	T_C = 25 °C	P_D	51	W
	T_C = 100 °C		20	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	275	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.45	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.

UNIKC Semiconductor

RoHS Compliant

P0603BD

N-Channel Enhancement Mode MOSFET

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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.6	3.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, 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} = 10V, V_{GS} = 10V	70			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 30A		6.2	9.0	mΩ
		V_{GS} = 10V, I_D = 30A		4.6	5.8	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		90		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		2110		pF
Output Capacitance	C_{oss}			469		
Reverse Transfer Capacitance	C_{rss}			336		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.4		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 15V, V_{GS} = 10V, ID = 25A		44		nC
Gate-Source Charge[2]	Q_{gs}			8		
Gate-Drain Charge[2]	Q_{gd}			9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 15V, $I_D \cong$ 25A, V_{GS} = 10V, R_{GEN} = 25Ω		23		nS
Rise Time[2]	t_r			36		
Turn-Off Delay Time[2]	$t_{d(off)}$			88		
Fall Time[2]	t_f			35		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				39	A
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_S = 30A, dI_F/dt = 100A / μS		55		nS
Reverse Recovery Charge	Q_{rr}			25		nC

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

[2]Independent of operating temperature.

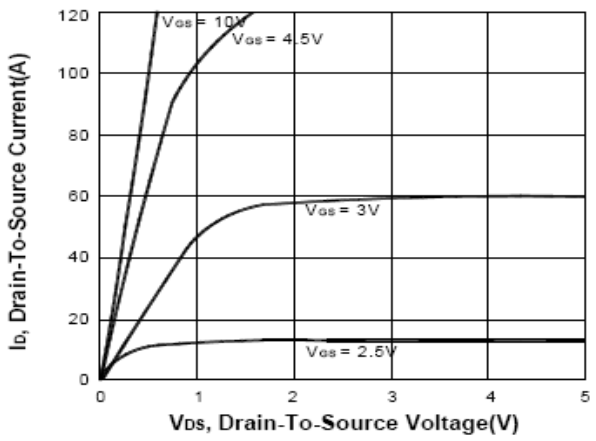
UNIKC Semiconductor

RoHS Compliant

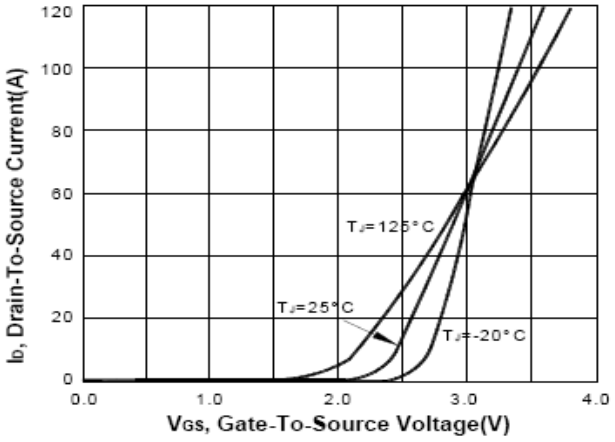
P0603BD

N-Channel Enhancement Mode MOSFET

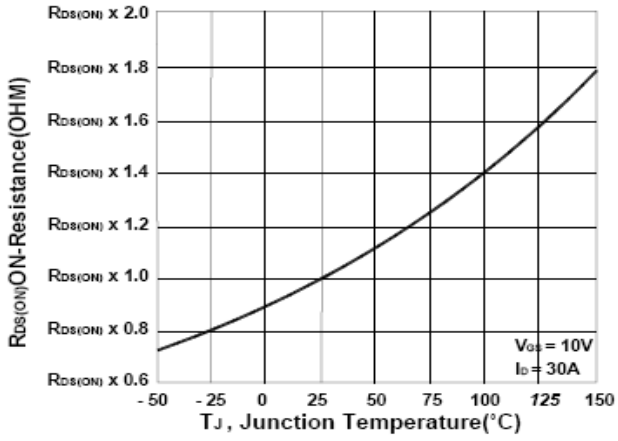
Output Characteristics



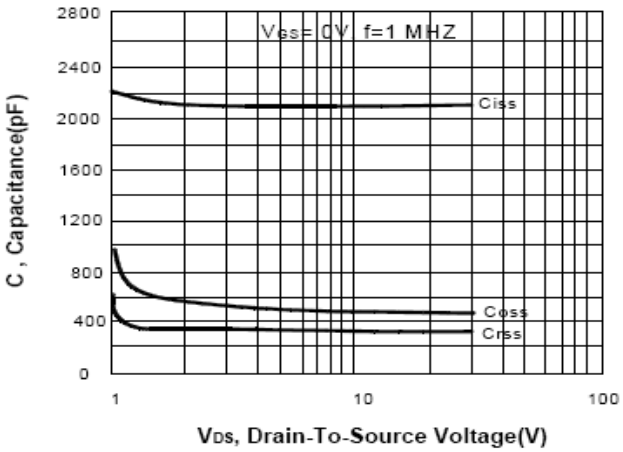
Transfer Characteristics



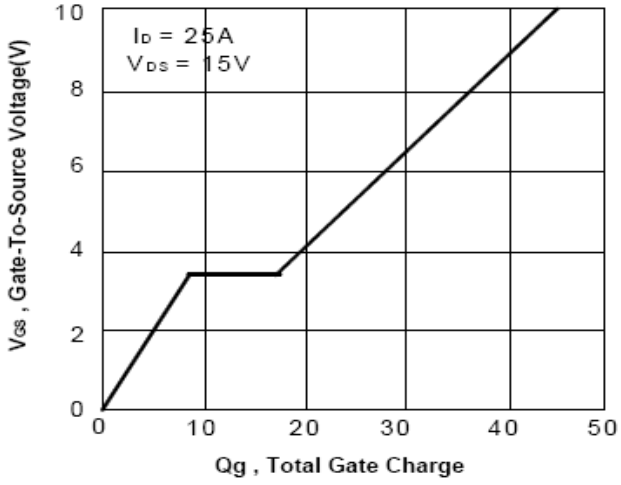
On-Resistance VS Temperature



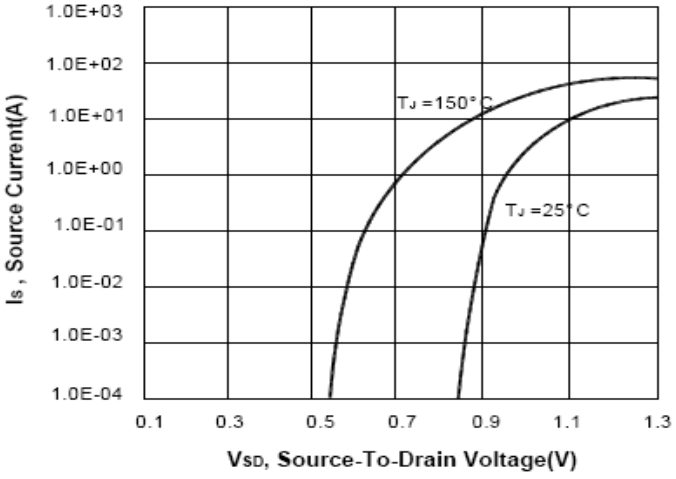
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



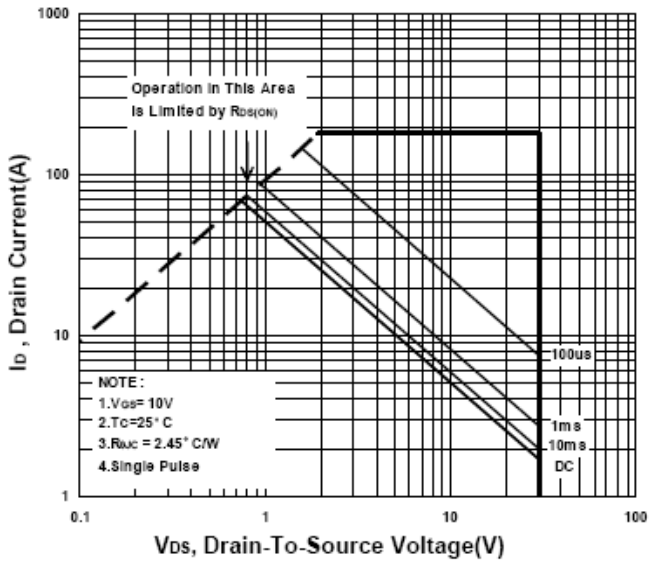
UNIKC Semiconductor

RoHS Compliant

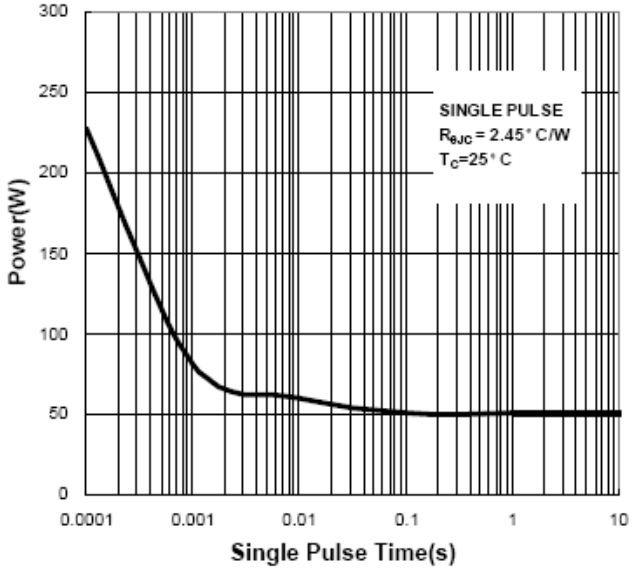
P0603BD

N-Channel Enhancement Mode MOSFET

Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve