UNIKC Semiconductor

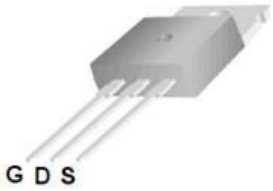
RoHS Compliant

P50N03LTG

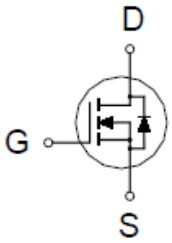
N-Channel Logic Level Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
25V	10mΩ @V_{GS} = 10V	60A



TO-220



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	60	A
	T_C = 100 °C		38	
Pulsed Drain Current[1]		I_{DM}	150	
Avalanche Current		I_{AS}	36	
Avalanche Energy	L = 0.1mH	E_{AS}	65	mJ
Power Dissipation	T_C = 25 °C	P_D	52	W
	T_C = 100 °C		21	
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	$R_{\theta JC}$		2.4	°C / W
Junction-to-Ambient	$R_{\theta JA}$		50	

[1]Pulse width limited by maximum junction temperature.

UNIKC Semiconductor

RoHS Compliant

P50N03LTG

N-Channel Logic Level Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS (T_C = 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	25			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	3	
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_C = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V	150			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 5V, I_D = 20A		12	20	mΩ
		V_{GS} = 10V, I_D = 20A		8	10	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 20A		40		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		960		pF
Output Capacitance	C_{oss}			380		
Reverse Transfer Capacitance	C_{rss}			250		
Total Gate Charge[2]	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 20A		22.3		nC
Gate-Source Charge[2]	Q_{gs}			4.7		
Gate-Drain Charge[2]	Q_{gd}			5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V,R_L = 1Ω, I_D ≅ 20A,V_{GS} = 10V, R_{GEN} = 6Ω		13		nS
Rise Time[2]	t_r			105		
Turn-Off Delay Time[2]	$t_{d(off)}$			33		
Fall Time[2]	t_f			5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				40	A
Forward Voltage[1]	V_{SD}	I_S = 25A,, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	V_R=15 V, I_F=I_S, di/ dt = 100 A/μs		45		nS
Reverse Recovery Charge	Q_{rr}			98		nC

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

[2]Independent of operating temperature.

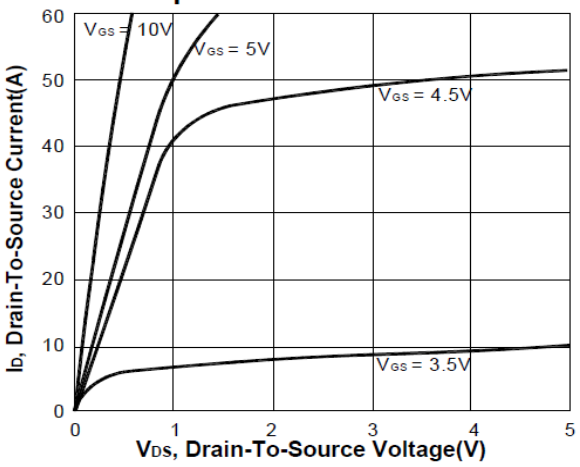
UNIKC Semiconductor

RoHS Compliant

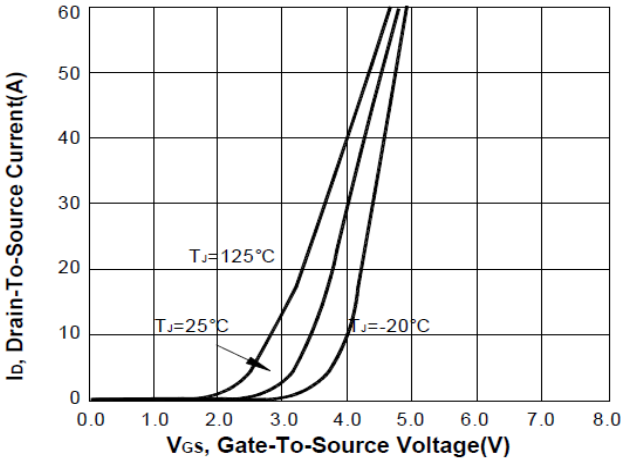
P50N03LTG

N-Channel Logic Level Enhancement Mode MOSFET

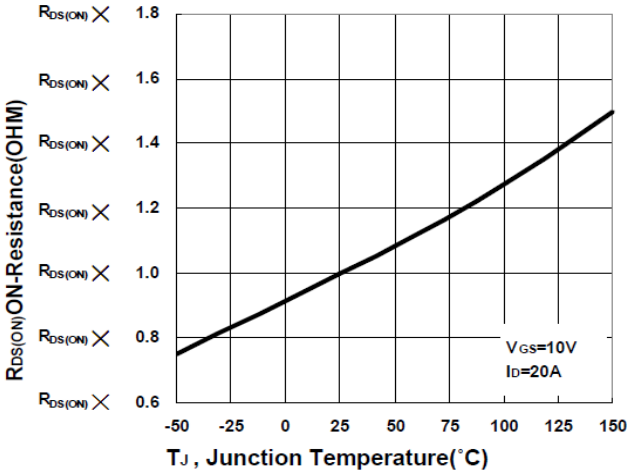
Output Characteristics



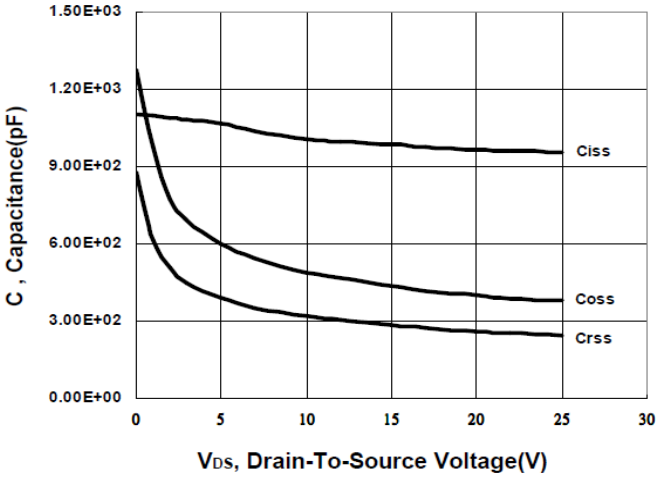
Transfer Characteristics



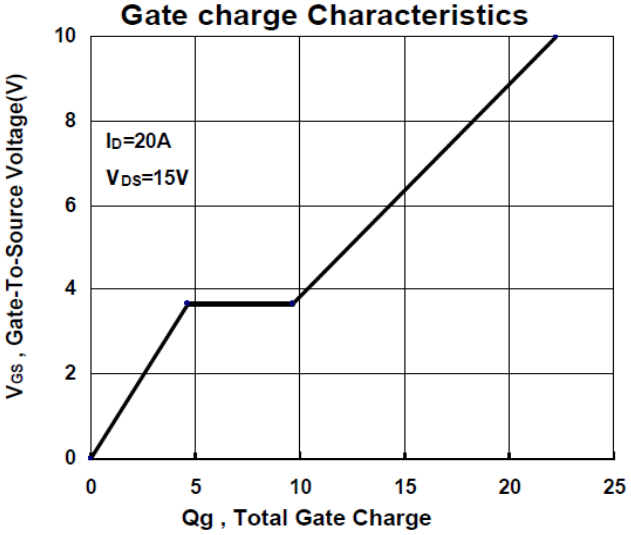
On-Resistance VS Temperature



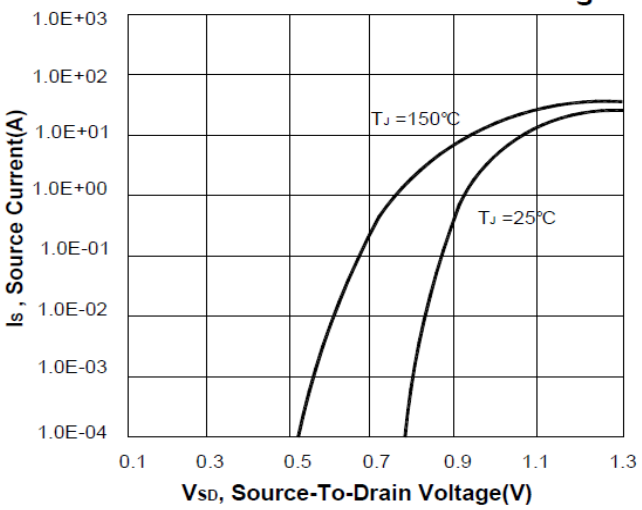
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



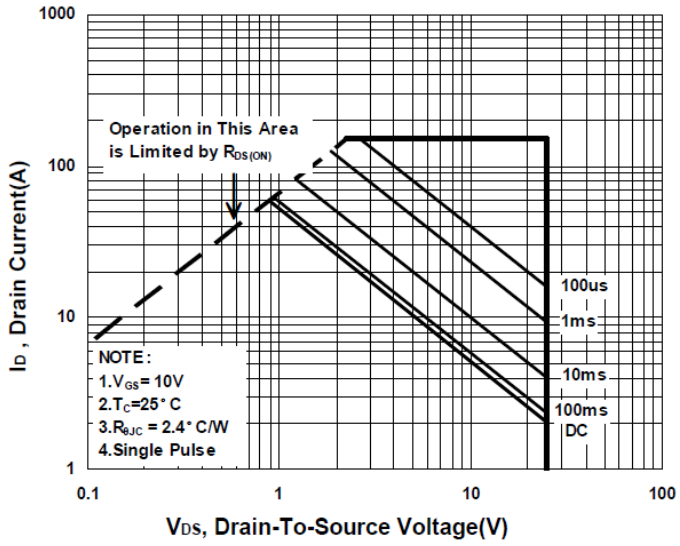
UNIKC Semiconductor

RoHS Compliant

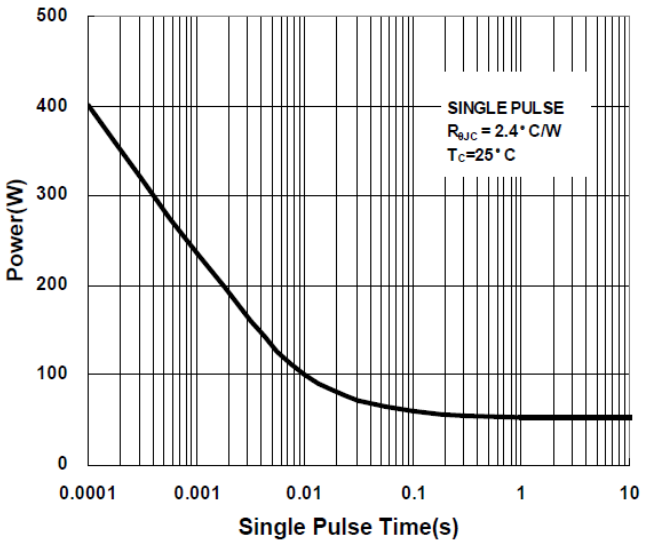
P50N03LTG

N-Channel Logic Level Enhancement Mode MOSFET

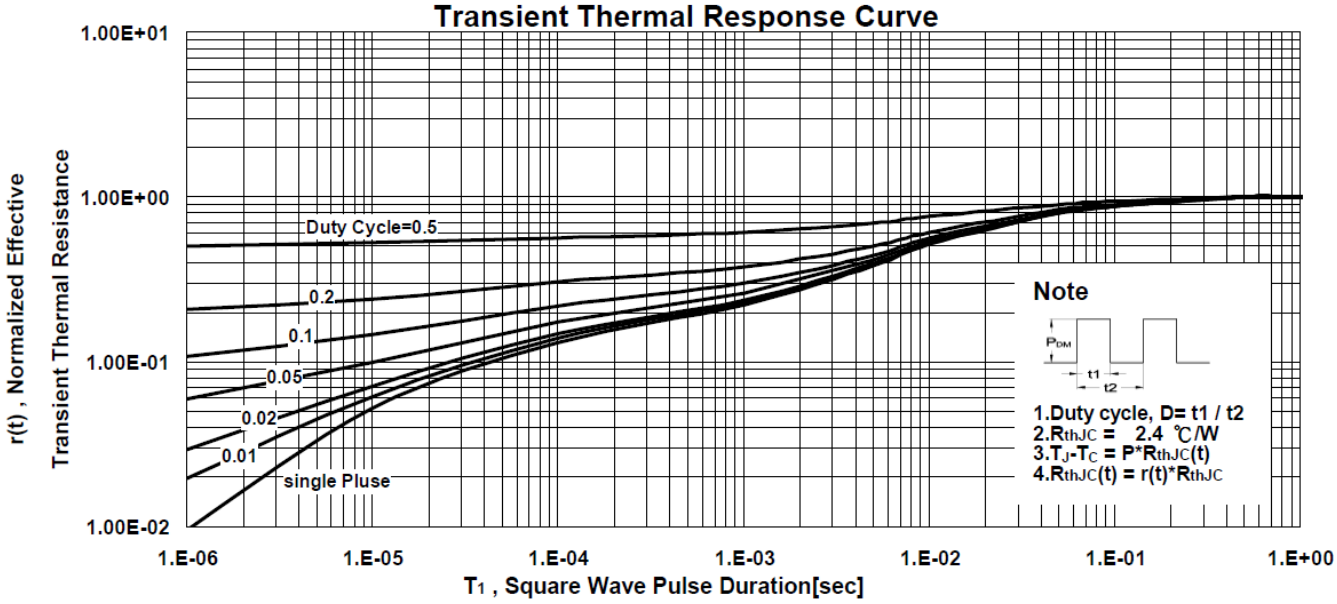
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



UNIKC Semiconductor

RoHS Compliant

P50N03LTG

N-Channel Logic Level Enhancement Mode MOSFET

Package Dimension

TO-220 (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.652	10.16	11.5	H	2.04	2.54	3.04
B	2.54	2.79	3.048	I	1.15	1.52	1.778
C	17.3		22.86	J	3.556	4.57	4.826
D	26.924	29.03	31.242	K	0.508	1.3	1.45
E	14.224	15.45	16.510	L	1.89	2.69	3.09
F	8.382	9.20	9.40	M	0.34	0.5	0.6
G	0.381	0.81	1.016	N