UNIKC Semiconductor

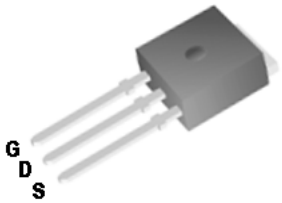
RoHS Compliant

P6006BI

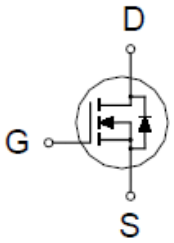
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
60V	65mΩ @V_{GS} = 10V	18A



TO-251



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25 °C	I_D	18	A
	T_C = 100 °C		11.8	
Pulsed Drain Current[1]		I_{DM}	34	
Avalanche Current		I_{AS}	18	
Avalanche Energy	L = 0.1mH	E_{AS}	16	mJ
Power Dissipation	T_C = 25 °C	P_D	50	W
	T_C = 100 °C		20	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.5	°C / W

[1]Pulse width limited by maximum junction temperature.

UNIKC Semiconductor

RoHS Compliant

P6006BI

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	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.6	2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1	μA
		V_{DS} = 40V, V_{GS} = 0V , T_J = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 5V, I_D = 8A		63	80	mΩ
		V_{GS} = 10V, I_D = 12A		53	65	
Forward Transconductance[1]	g_{fs}	V_{DS} = 15V, I_D = 12A		22		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		601		pF
Output Capacitance	C_{oss}			48		
Reverse Transfer Capacitance	C_{rss}			33		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.2		Ω
Total Gate Charge[2]	Q_g (V_{GS} = 10V)	V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 12A		13		nC
	Q_g (V_{GS} = 5V)			7.6		
Gate-Source Charge[2]	Q_{gs}			4.5		
Gate-Drain Charge[2]	Q_{gd}			2.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 30V, I_D ≅ 12A, V_{GS} = 10V, R_{GEN} = 6Ω		8.3		nS
Rise Time[2]	t_r			37		
Turn-Off Delay Time[2]	$t_{d(off)}$			44		
Fall Time[2]	t_f			53		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				18	A
Forward Voltage[1]	V_{SD}	I_F = 12A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 12A, dI_F/dt = 100A / μS		23		nS
Reverse Recovery Charge	Q_{rr}			19		nC

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

[2]Independent of operating temperature.

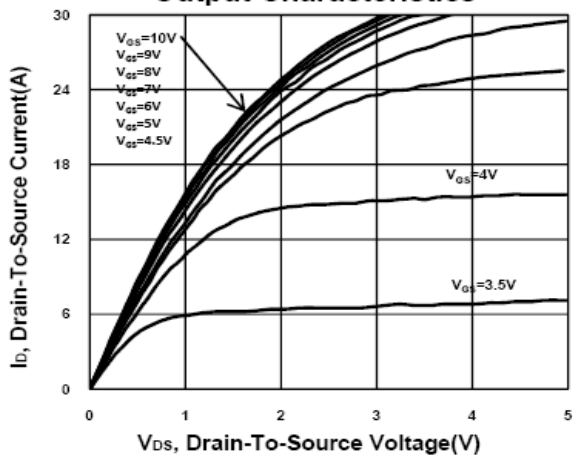
UNIKC Semiconductor

RoHS Compliant

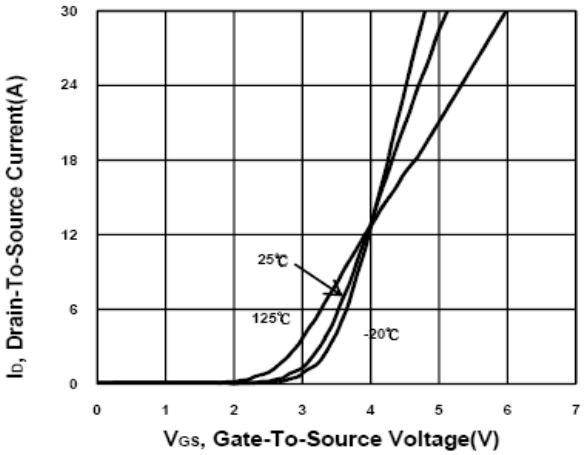
P6006BI

N-Channel Enhancement Mode MOSFET

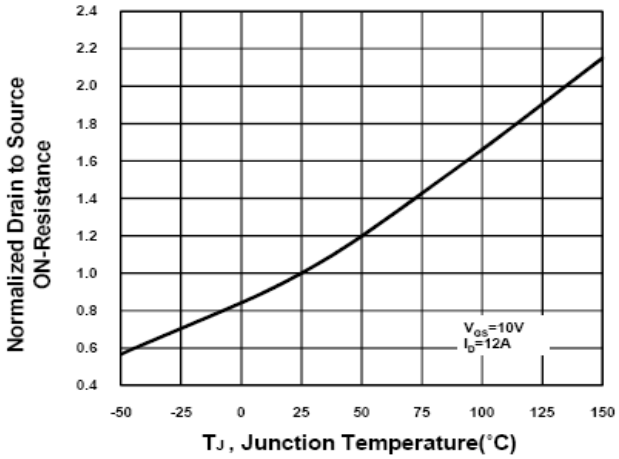
Output Characteristics



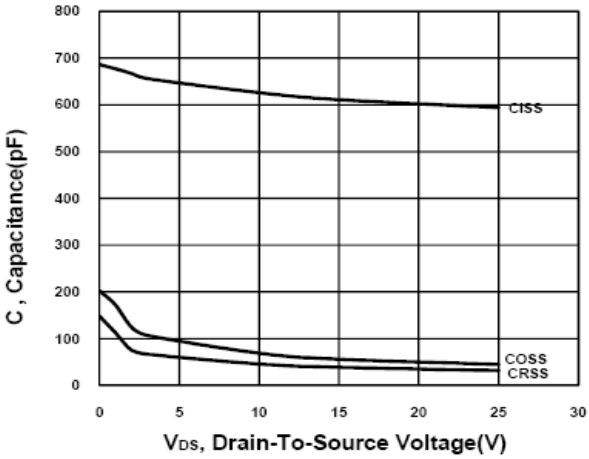
Transfer Characteristics



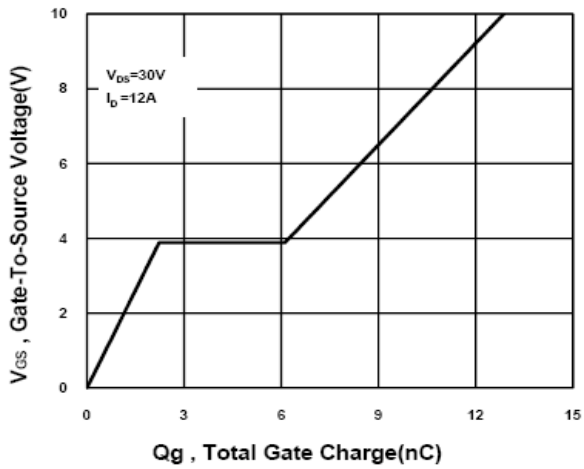
On-Resistance VS Temperature



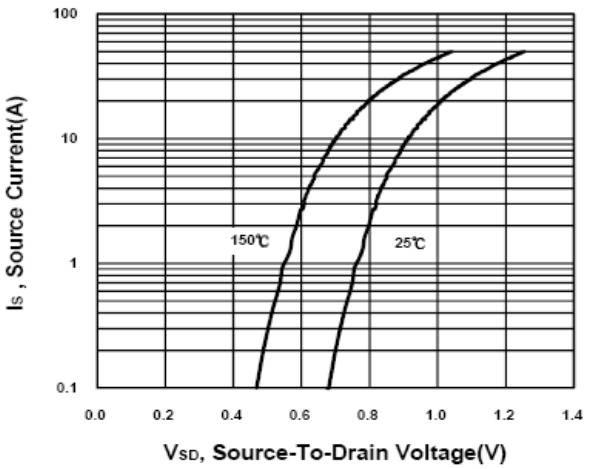
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



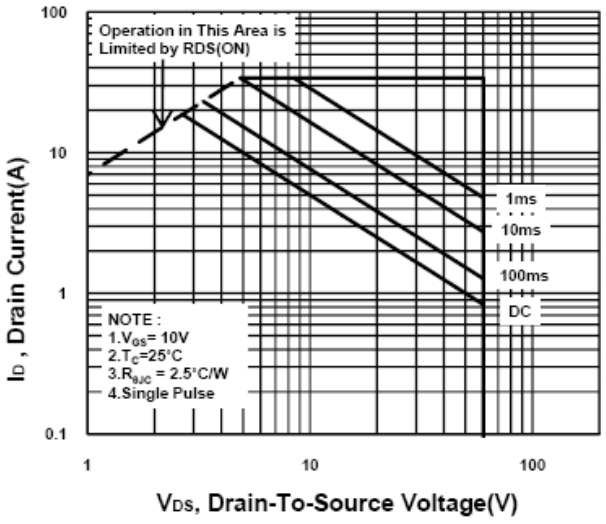
UNIKC Semiconductor

RoHS Compliant

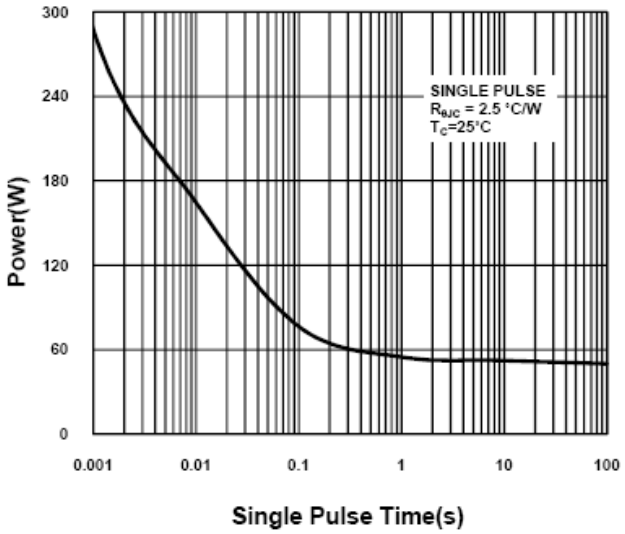
P6006BI

N-Channel Enhancement Mode MOSFET

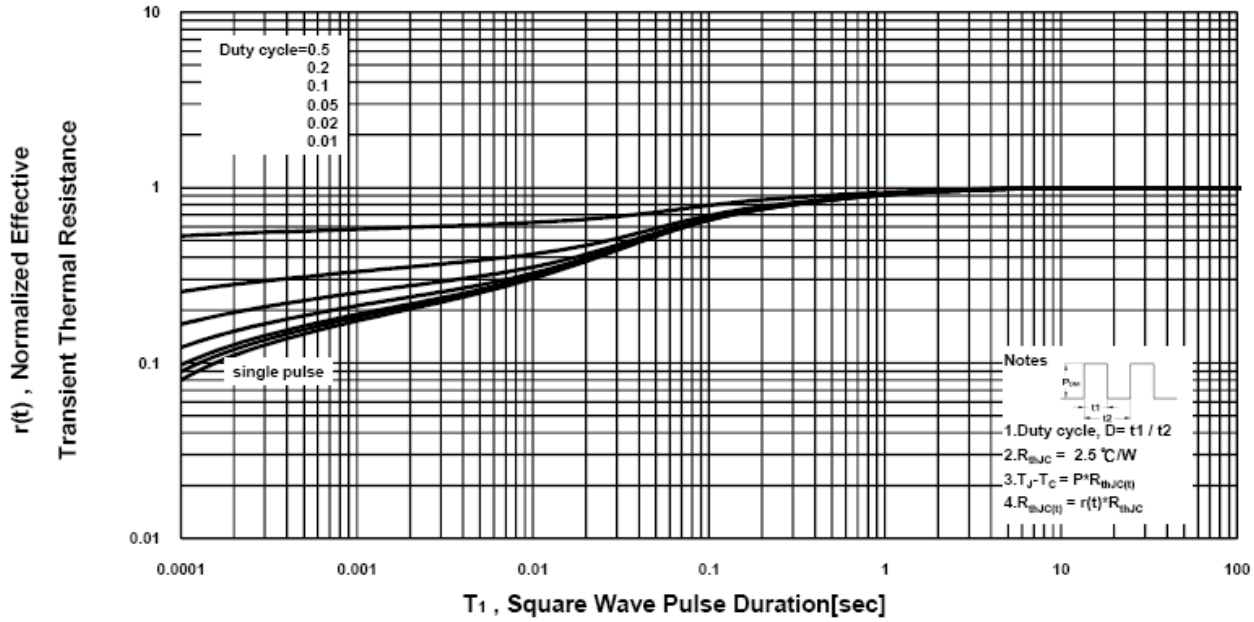
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



UNIKC Semiconductor

RoHS Compliant

P6006BI

N-Channel Enhancement Mode MOSFET

Package Dimension

TO-251 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	14	15	17.14	H	0.89		1.7
B	2.1	2.3	2.5	I	6.3		6.8
C	0.4	0.5	0.6	J	4.8		5.5
D	0.35	0.5	0.65	K	0.5	0.84	1.14
E	0.9	1.1	1.5	L	0.4	0.76	0.912
F	7		9.65	M		2.3	
G	5.3		6.22	N	1.4	2.16	2.23