UNIKC
Semiconductor

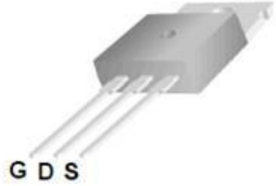
RoHS Compliant

P1825AT

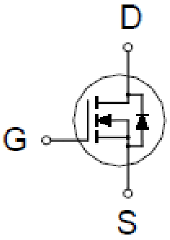
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
250V	0.2Ω @V_{GS} = 10V	18A



TO-220



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25 °C	I_D	18	A
	T_C = 100 °C		8.5	
Pulsed Drain Current[2]		I_{DM}	72	
Avalanche Current		I_{AS}	15	
Avalanche Energy	L = 1mH	E_{AS}	106	mJ
Power Dissipation	T_C = 25 °C	P_D	90	W
	T_C = 100 °C		36	
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	$R_{\theta JC}$		1.39	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1] Pulse width limited by maximum junction temperature.

[2] Limited by package.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

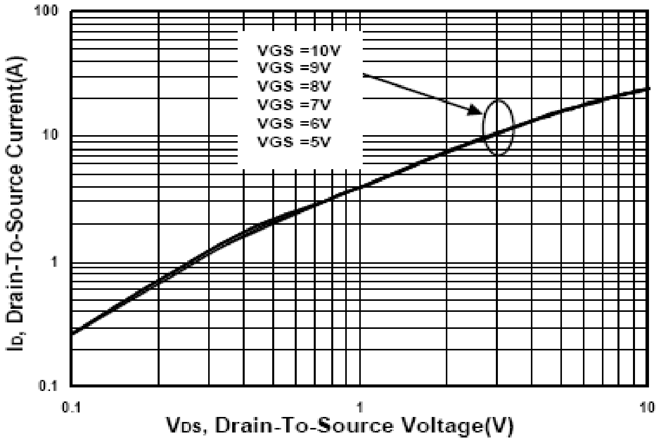
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	250			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.7	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250V, V_{GS} = 0V			1	μA
		V_{DS} = 200V, V_{GS} = 0V , T_J = 125 °C			10	
Drain-Source On-State	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 9A		0.18	0.2	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 18A		20		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1810		pF
Output Capacitance	C_{oss}			153		
Reverse Transfer Capacitance	C_{rss}			33		
Total Gate Charge[2]	Q_g	V_{DS} = 200V, V_{GS} = 10V, ID = 9A		57		nC
Gate-Source Charge[2]	Q_{gs}			9		
Gate-Drain Charge[2]	Q_{gd}			26		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 125V, I_D ≅ 18A, V_{GS} = 10V, R_{GEN} = 6Ω		31		nS
Rise Time[2]	t_r			215		
Turn-Off Delay Time[2]	$t_{d(off)}$			73		
Fall Time[2]	t_f			118		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				18	A
Forward Voltage[1]	V_{SD}	I_F = 18A, V_{GS} = 0V			1.6	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, IF = 18A, dIF/dt = 100A / μS		210		nS
Reverse Recovery Charge	Q_{rr}			1.3		μC

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

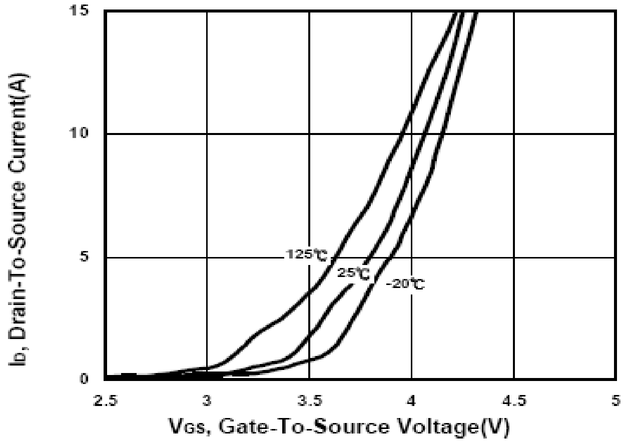
[2] Independent of operating temperature.

[3] Limited by maximum junction temperature.

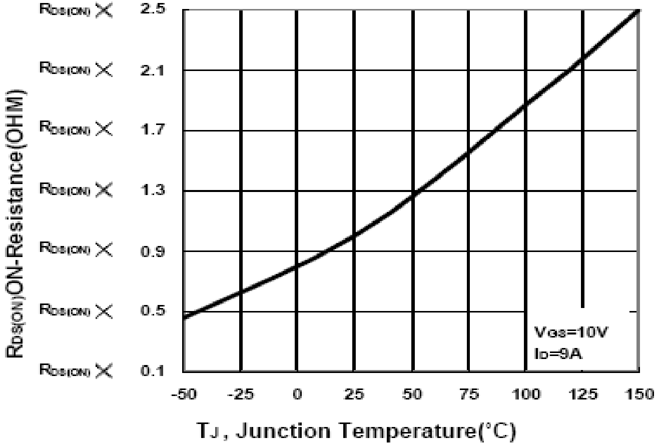
Output Characteristics



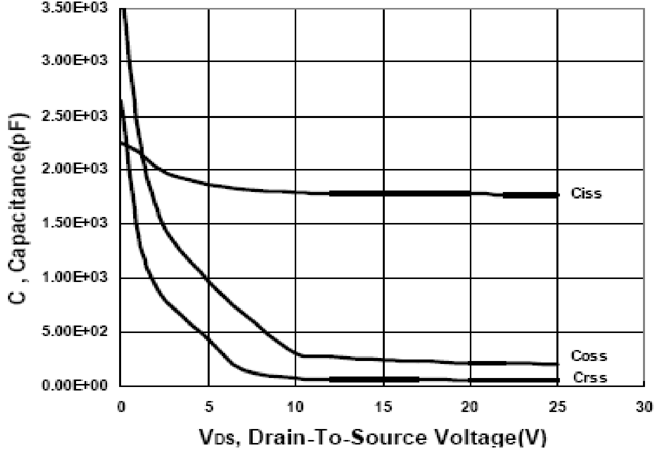
Transfer Characteristics



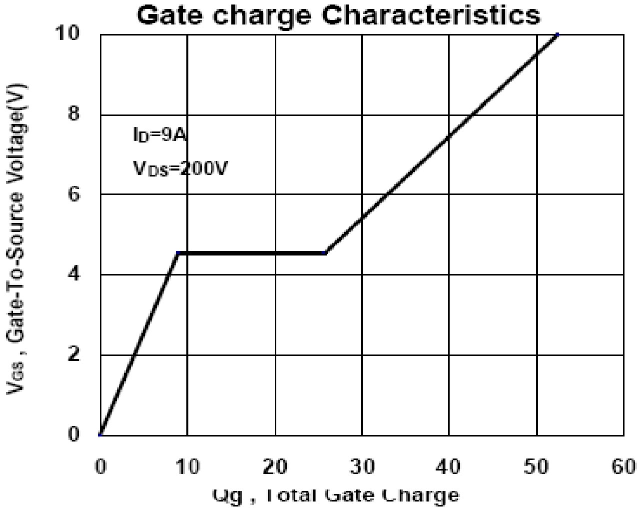
On-Resistance VS Temperature



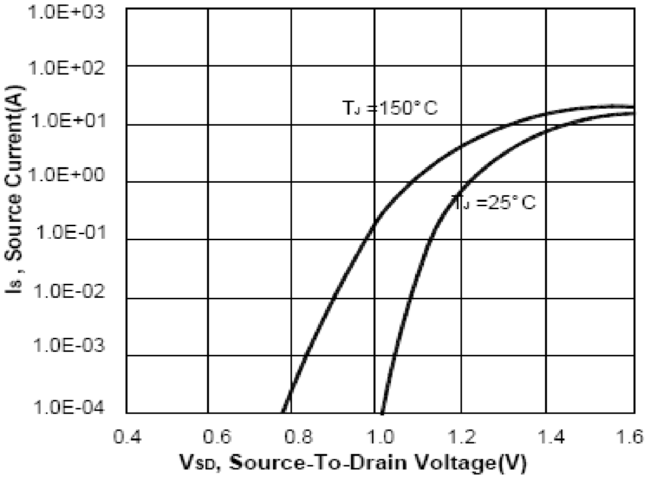
Capacitance Characteristic



Gate charge Characteristics



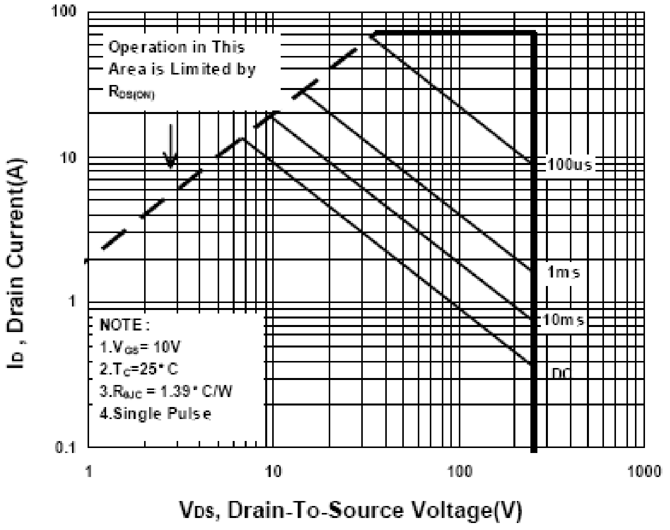
Source-Drain Diode Forward Voltage



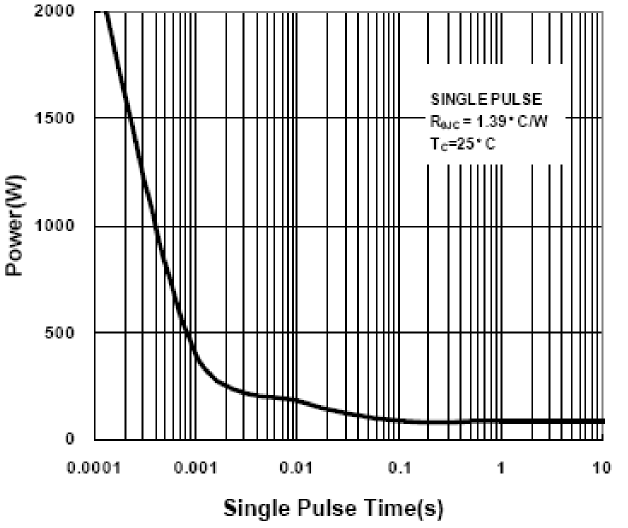
P1825AT

N-Channel Enhancement Mode MOSFET

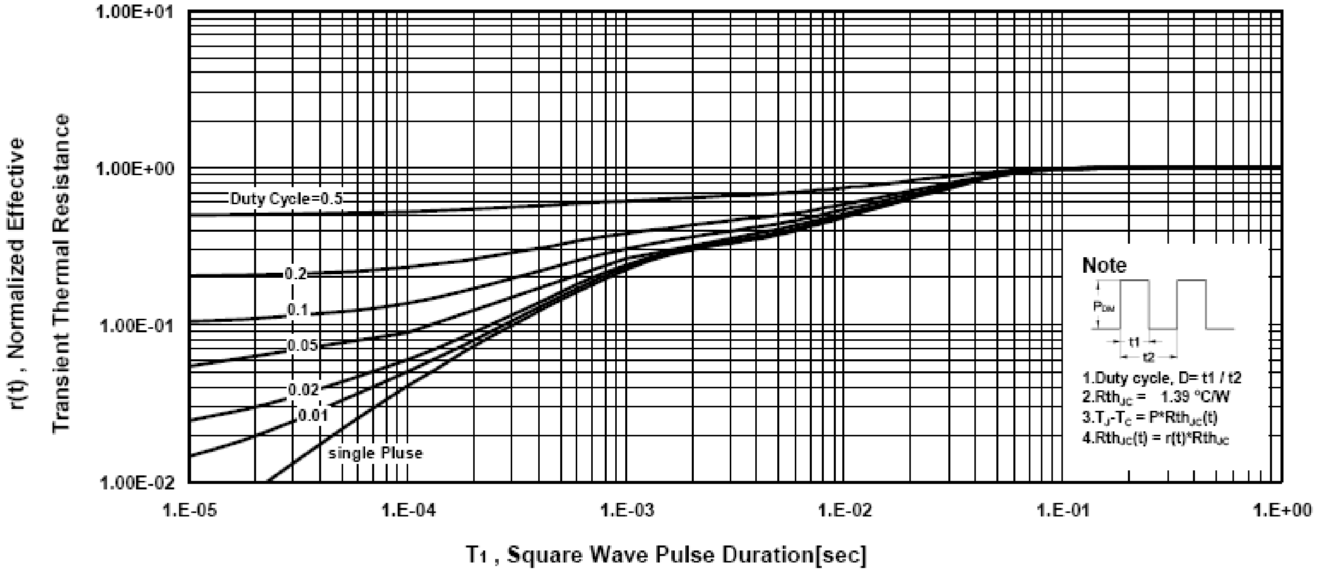
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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