UNIKC
Semiconductor

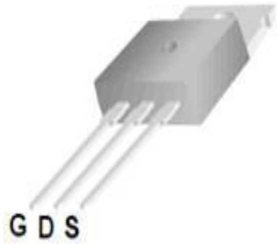
RoHS Compliant

P1510ATG

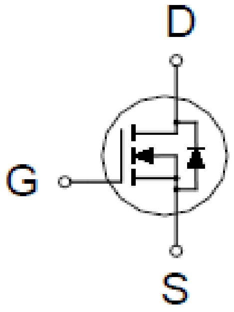
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	15mΩ @V_{GS} = 10V	64A



TO-220



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C= 25 °C	I_D	64	A
	T_C= 100 °C		45	
Pulsed Drain Current[1]		I_{DM}	200	
Avalanche Current		I_{AS}	67	
Avalanche Energy	L = 0.1 mH	E_{AS}	224	mJ
Power Dissipation	T_C= 25 °C	P_D	150	W
	T_C= 100°C		75	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 175	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1] Pulse width limited by maximum junction temperature.

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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	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =80V, V_{GS} = 0V			1	μA
		V_{DS} =80V, V_{GS} = 0V, T_J = 125°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} =10V, I_D = 30A		13	15	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} =5V, I_D = 30A		43		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		7100		pF
Output Capacitance	C_{oss}			420		
Reverse Transfer Capacitance	C_{rss}			298		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		3.2		Ω
Total Gate Charge[2]	Q_g	V_{DS} =50V, V_{GS} = 10V, I_D = 20A		131		nC
Gate-Source Charge[2]	Q_{gs}			45		
Gate-Drain Charge[2]	Q_{gd}			34		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50V $I_D \cong$ 30A, V_{GS}= 10V, R_{GEN} =6Ω		20		nS
Rise Time[2]	t_r			110		
Turn-Off Delay Time[2]	$t_{d(off)}$			85		
Fall Time[2]	t_f			183		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				64	A
Forward Voltage[1]	V_{SD}	I_F = 30A, V_{GS} = 0V			1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V,, dI_S/dt = 100A / μS		89		nS
Reverse Recovery Charge	Q_{rr}			306		nC

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

[2] Independent of operating temperature.

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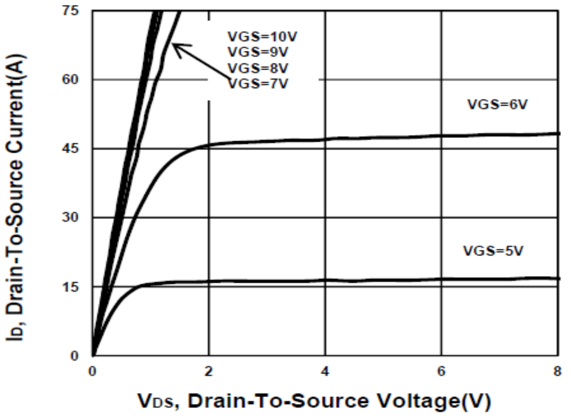
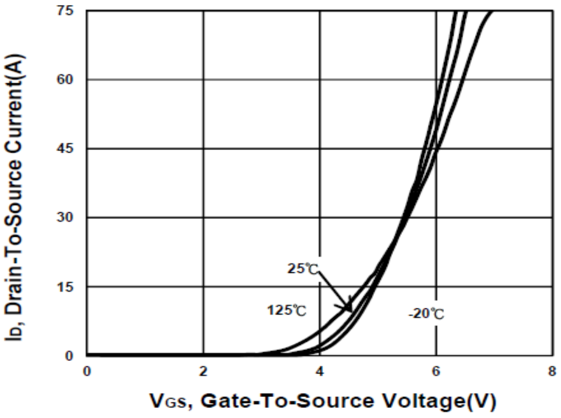
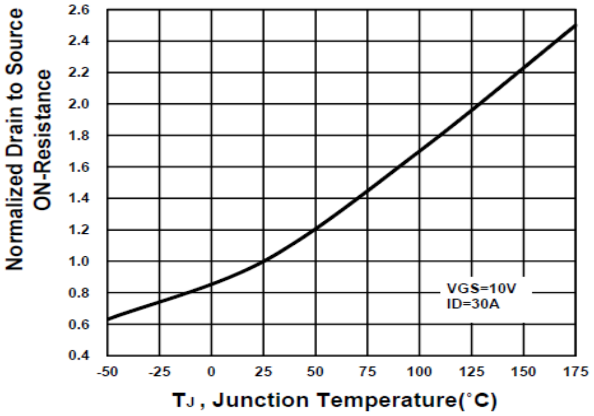
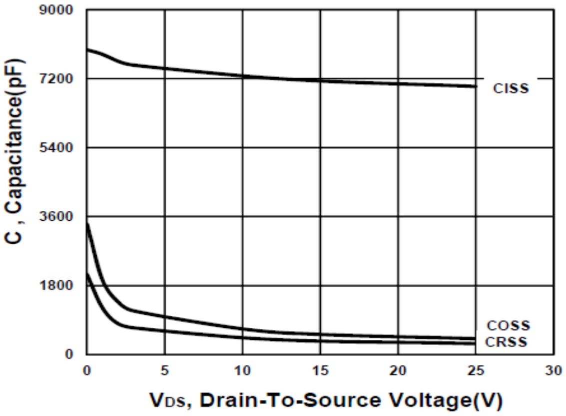
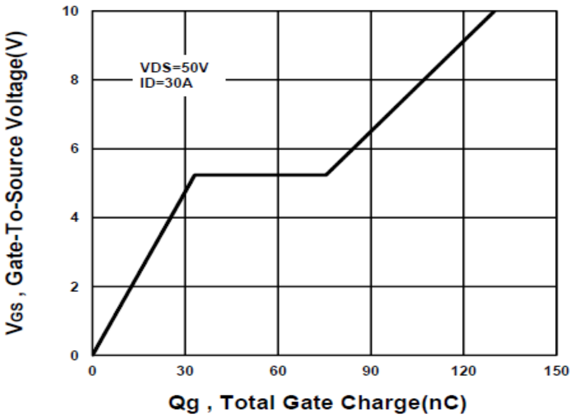
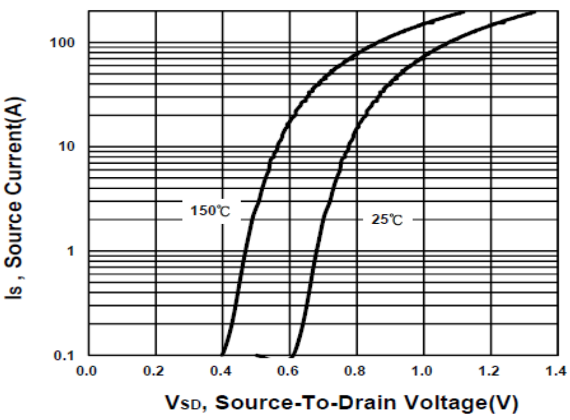

Output Characteristics


Transfer Characteristics


On-Resistance VS Temperature


Capacitance Characteristic


Gate charge Characteristics


Source-Drain Diode Forward Voltage

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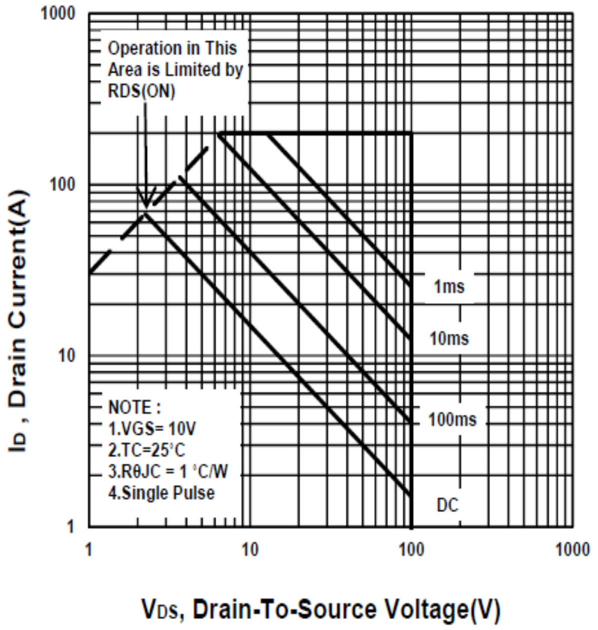
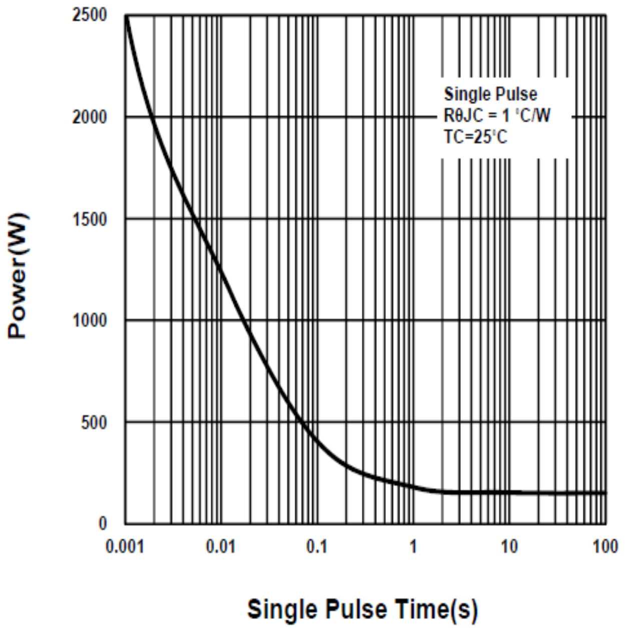
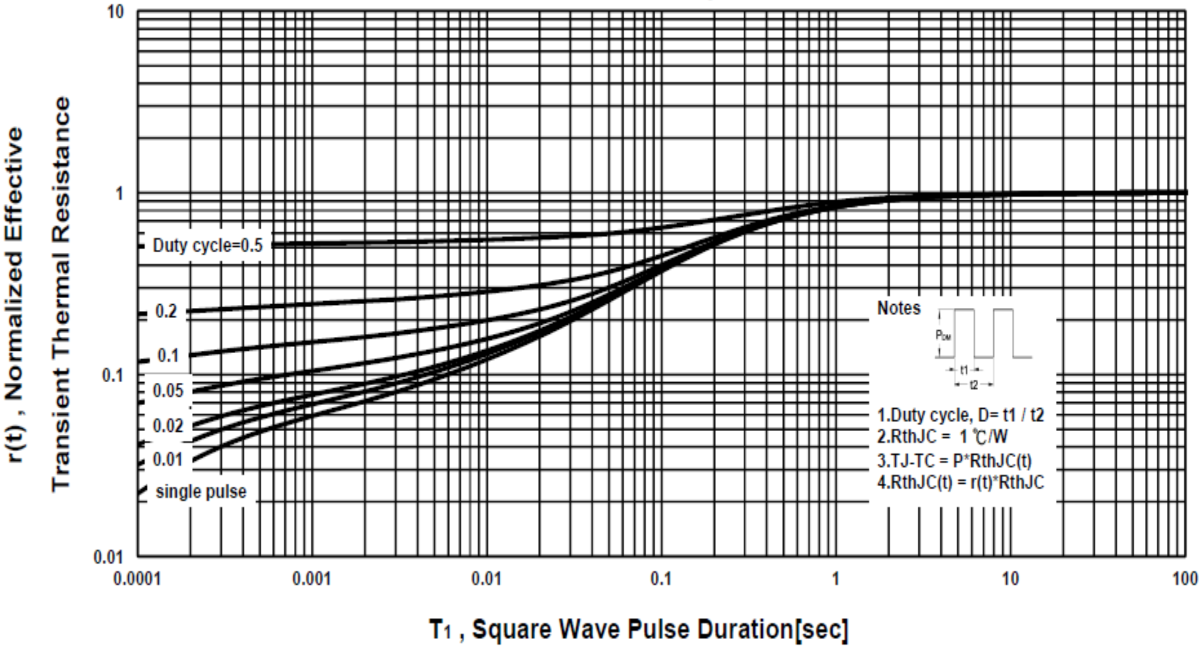
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-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