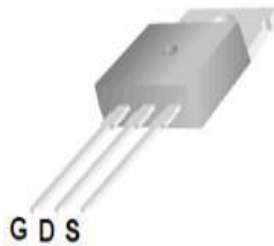


# P1510ATG

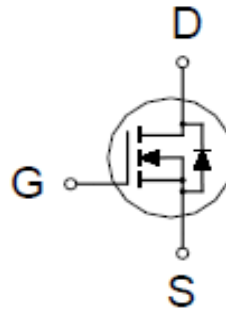
## N-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

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



TO-220



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

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

### THERMAL RESISTANCE RATINGS

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

<sup>1</sup>Pulse width limited by maximum junction temperature.

# P1510ATG

## N-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

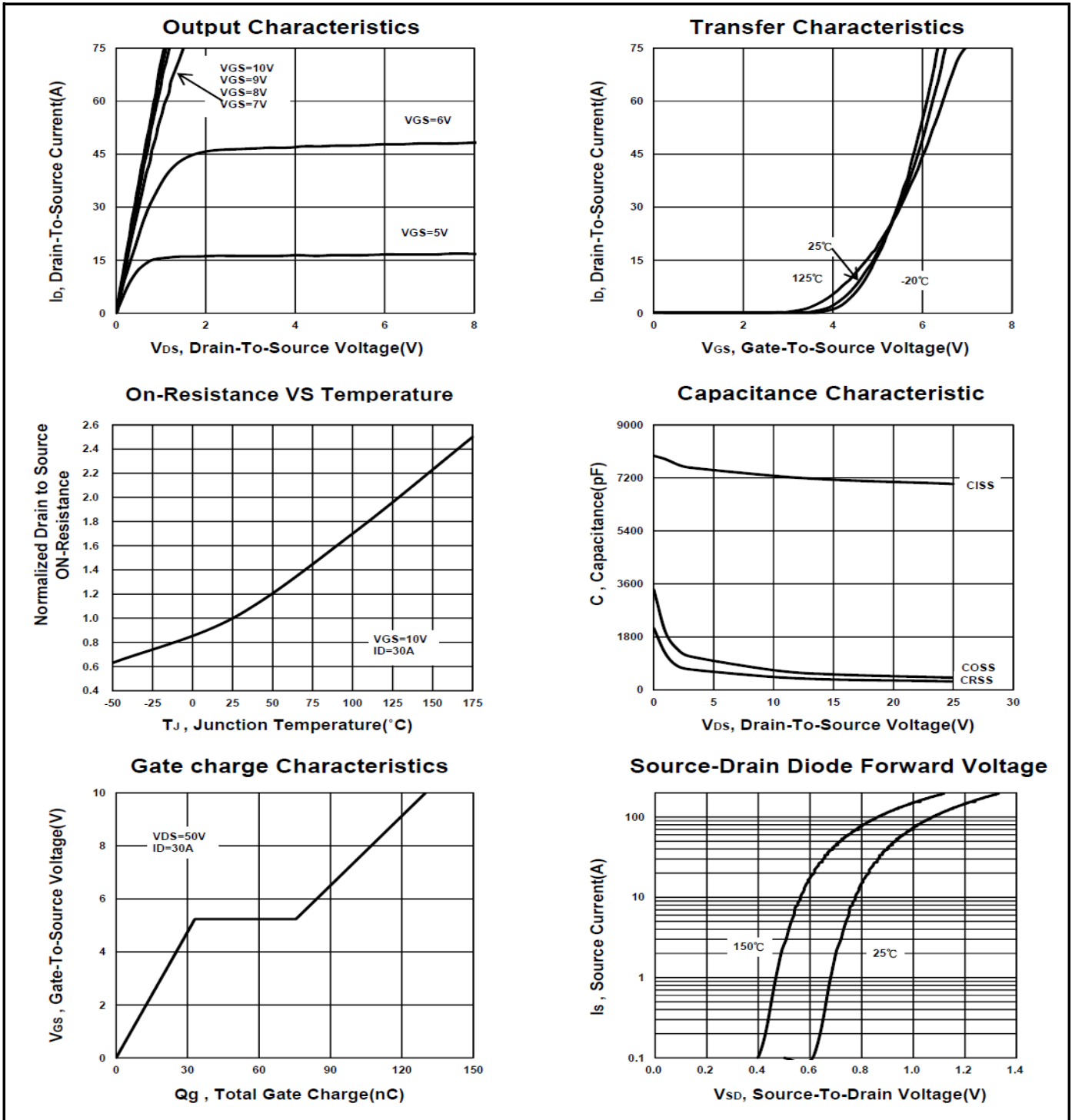
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	100			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2	3	4	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C			10	
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A		13	15	mΩ
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 30A		43		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1MHz		7100		pF
Output Capacitance	C <sub>oss</sub>			420		
Reverse Transfer Capacitance	C <sub>rss</sub>			298		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		3.2		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		131		nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			45		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			34		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 50V I <sub>D</sub> ≅ 30A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = 6Ω		20		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			110		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			85		
Fall Time <sup>2</sup>	t <sub>f</sub>			183		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				64	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 30A, V <sub>GS</sub> = 0V			1.4	V
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> = 0V, dI <sub>S</sub> /dt = 100A / μS		89		nS
Reverse Recovery Charge	Q <sub>rr</sub>				306	

<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

# P1510ATG

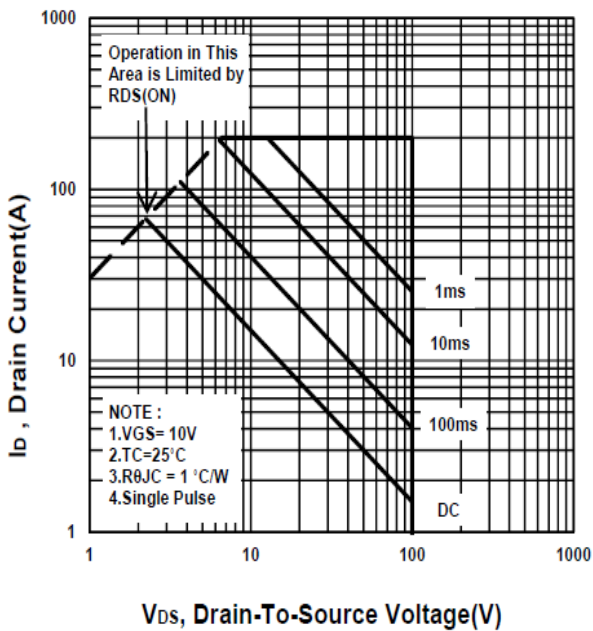
## N-Channel Enhancement Mode MOSFET



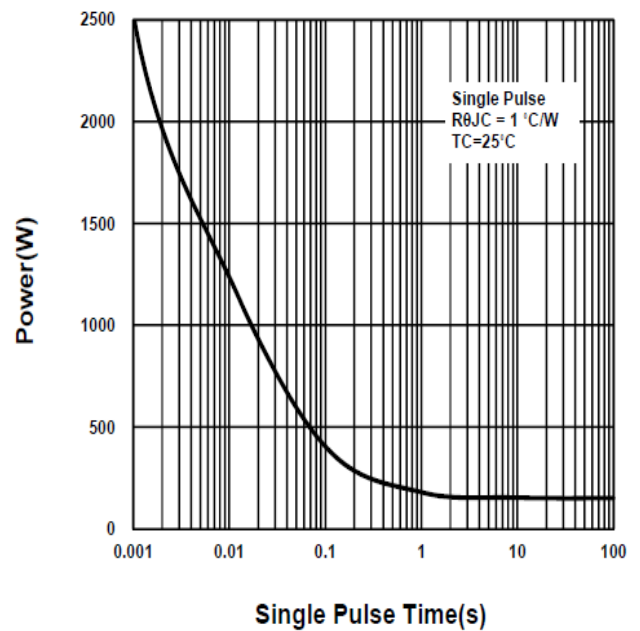
# P1510ATG

## N-Channel Enhancement Mode MOSFET

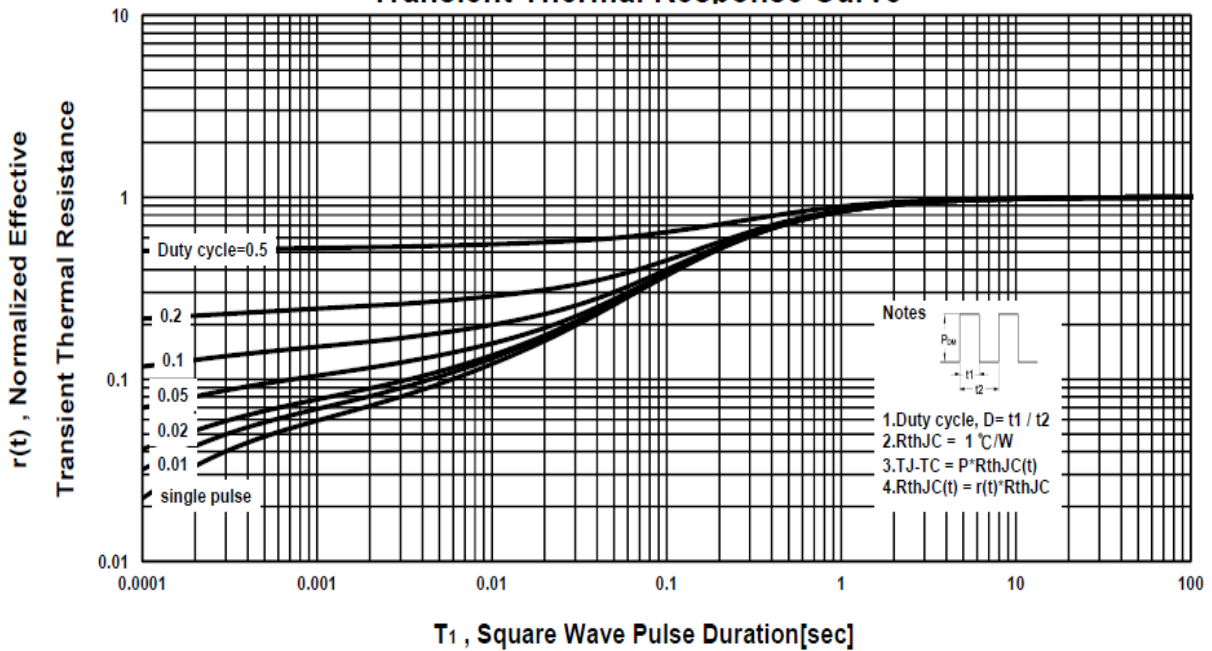
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



# P1510ATG

## N-Channel 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			

