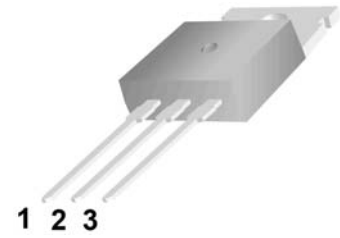
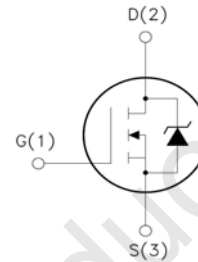


●Features:

- 20.0A, 500V, $R_{DS(on)(Typ)} = 0.21\Omega @ V_{GS}=10V$
- Low Gate Charge
- Low C_{rSS}
- 100% Avalanche Tested
- Fast Switching
- Improved dv/dt Capability

●Application:

- High Frequency Switching Mode Power Supply
- Active Power Factor Correction


TO-220


1. Gate (G)
2. Drain (D)
3. Source (S)

Absolute Maximum Ratings($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	500	V
I_D	Drain Current - Continuous($T_C=25^\circ\text{C}$) - Continuous($T_C=100^\circ\text{C}$)	20.0*	A
		12.9*	A
I_{DM}	Drain Current -Pulsed (Note1)	80*	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note2)	1110	mJ
I_{AR}	Avalanche Current (Note1)	20.0	A
E_{AR}	Repetitive Avalanche Energy (Note1)	25.0	mJ
dv/dt	Peak Diode Recovery dv/dt (Note3)	4.5	V/ns
P_D	Power Dissipation($T_C =25^\circ\text{C}$) -Derate above 25°C	70	W
		0.56	W/ $^\circ\text{C}$
T_j	Operating Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55 to+150	$^\circ\text{C}$

* Drain Current Limited by Maximum Junction Temperature.

Thermal Characteristics

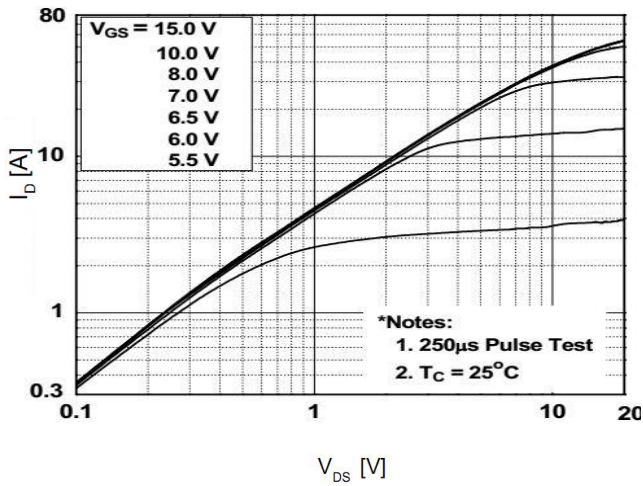
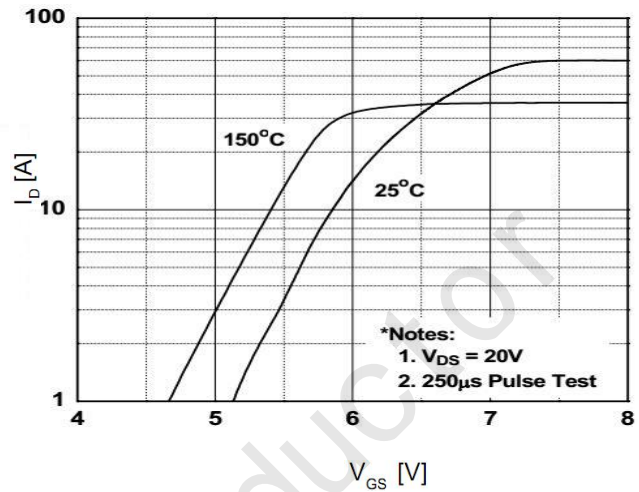
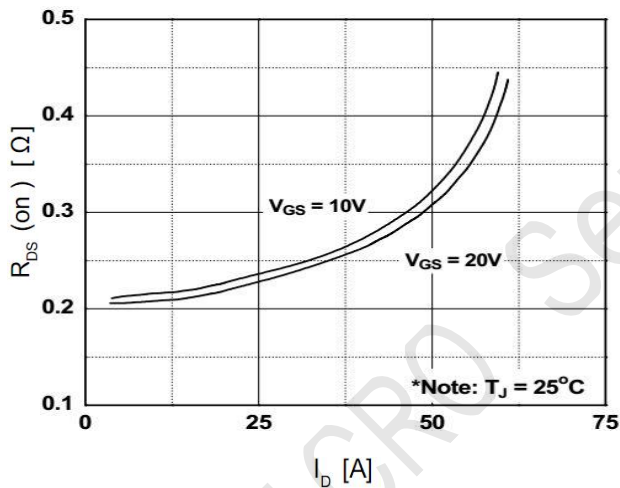
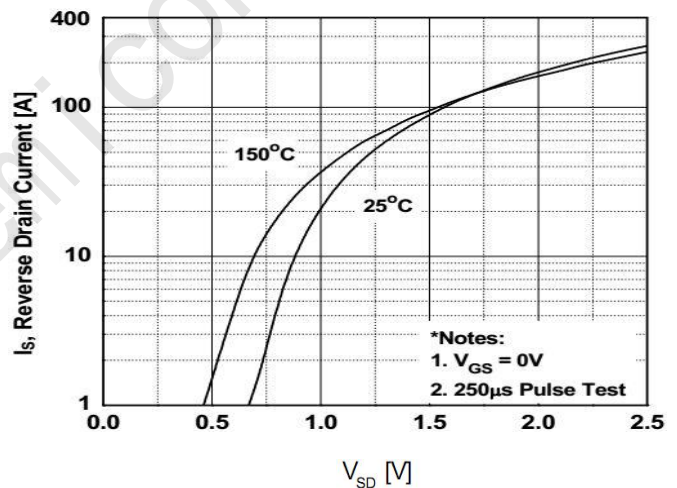
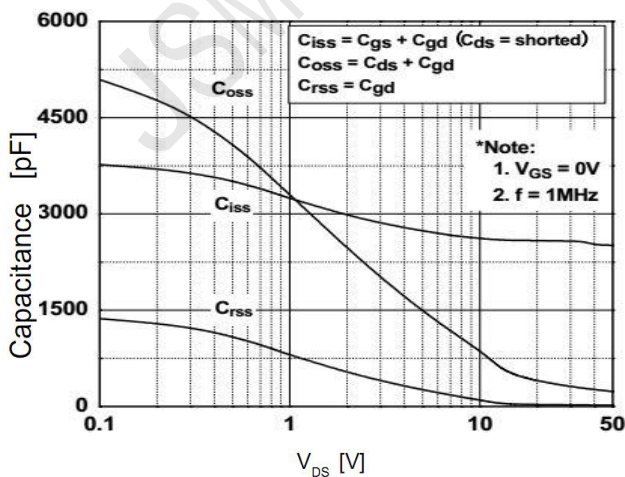
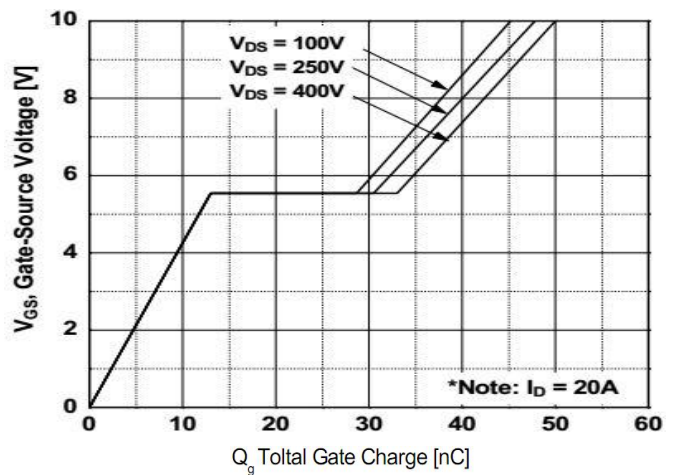
Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.78	$^\circ\text{C} / \text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C} / \text{W}$

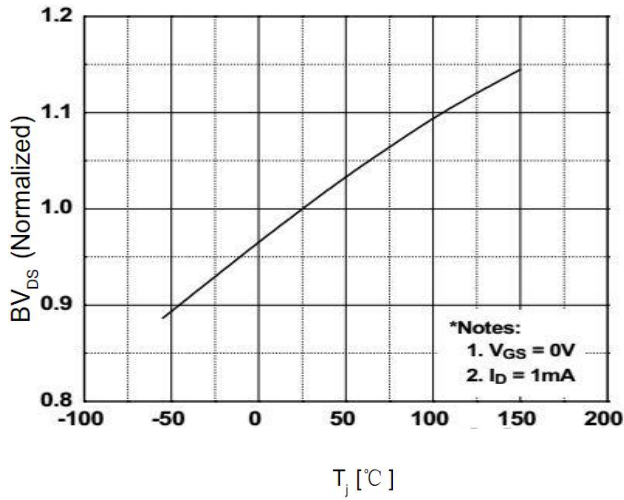
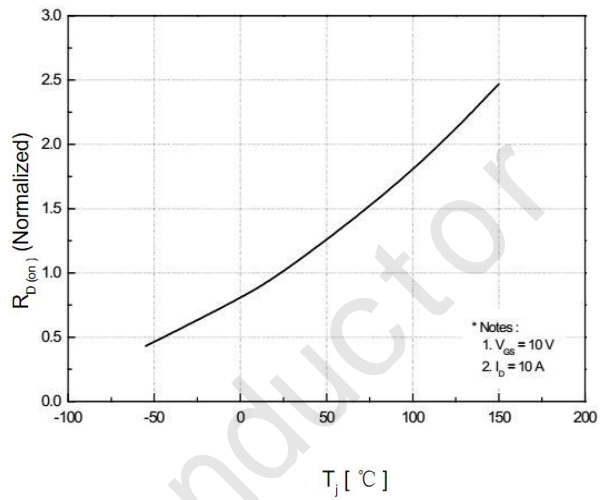
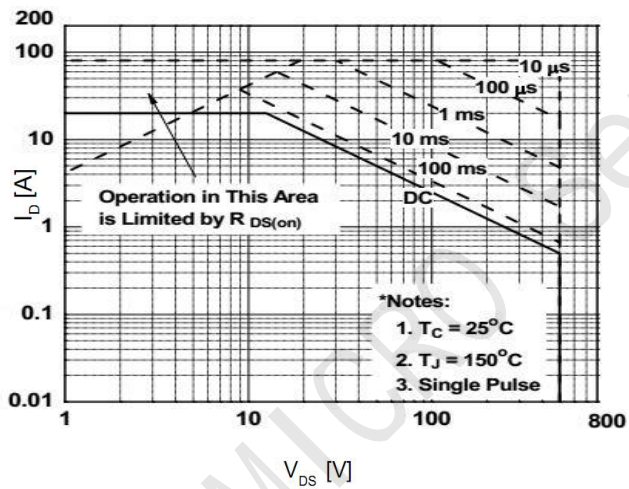
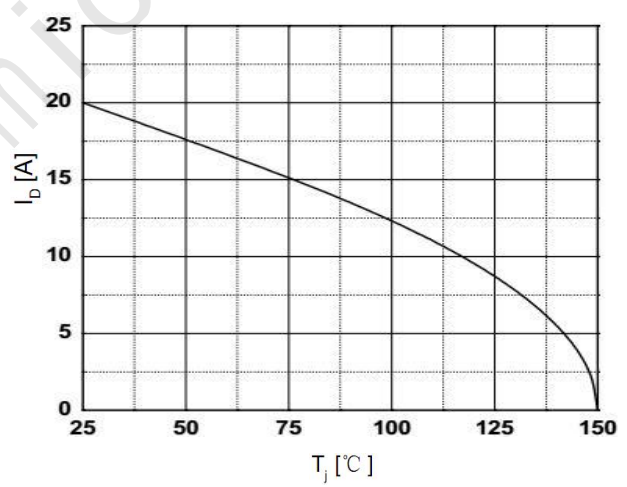
Electrical Characteristics(Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
BV _{DSS}	Drain-source Breakdown Voltage	V _{GS} =0V, I _D =250μA	500	--	--	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA (Referenced to 25°C)	--	0.7	--	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =500V, V _{GS} =0V	--	--	1	μA
		V _{DS} =400V, Tc=125°C	--	--	10	μA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	--	--	100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	--	--	-100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	2.0	--	4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =10 V, I _D =10.0A	--	0.21	0.26	Ω
g _{FS}	Forward Transconductance	V _{DS} =40 V, I _D =10.0A (Note4)	--	19	--	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	--	2540	--	pF
C _{oss}	Output Capacitance		--	340	--	pF
C _{rss}	Reverse Transfer Capacitance		--	26	--	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 250 V, I _D = 20.0A, R _G = 25 Ω (Note4,5)	--	45	--	ns
t _r	Turn-On Rise Time		--	120	--	ns
t _{d(off)}	Turn-Off Delay Time		--	100	--	ns
t _f	Turn-Off Fall Time		--	60	--	ns
Q _g	Total Gate Charge	V _{DS} = 400 V, I _D =20.0 A, V _{GS} = 10 V (Note4,5)	--	50	--	nC
Q _{gs}	Gate-Source Charge		--	14	--	nC
Q _{gd}	Gate-Drain Charge		--	20	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	20	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	80	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =20.0A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =20.0A, d I _F /dt=100A/μs (Note4)	--	154	--	ns
Q _{rr}	Reverse Recovery Charge		--	0.5	--	μC

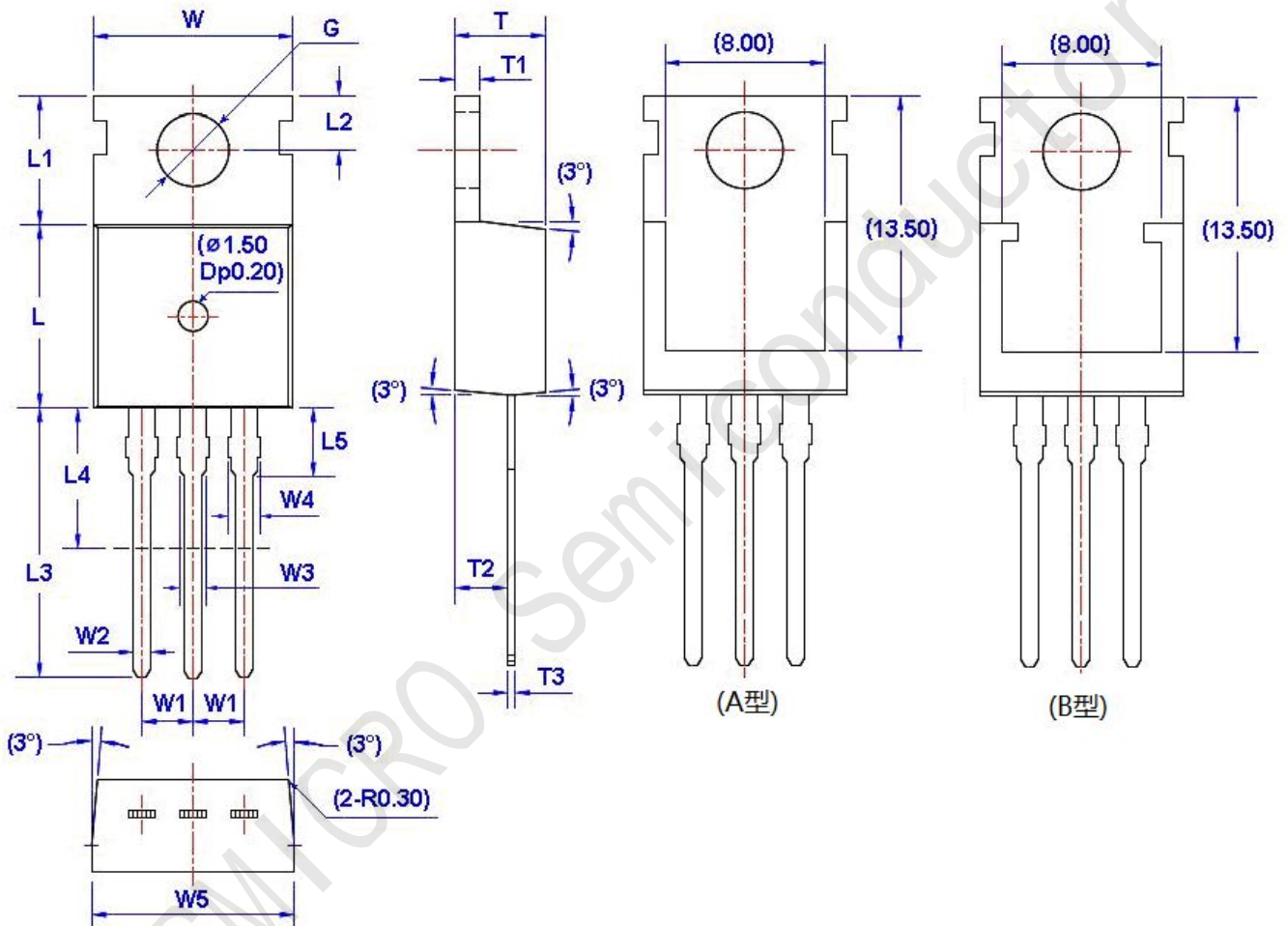
Notes:

- 1、Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature.
- 2、L = 5.0mH, I_{AS} =20.0A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25°C.
- 3、I_{SD}≤20.0A, di/dt≤200A/μs, V_{DD}≤BV_{DSS}, Starting T_J = 25°C.
- 4、Pulse Test : Pulse Width ≤300 μ s, Duty Cycle≤2%.
- 5、Essentially Independent of Operating Temperature.

On-Regin Characteristics

Transfer Characteristics

On-Resistance Variation vs. Drain Current and Gate Voltage

Body Diode Forward Voltage Variation vs. Source Current and Temperature

Capacitance Characteristics

Gate Charge Characteristics


Breakdown Voltage Variation vs. Temperature

On-Resistance Variation vs. Temperature

Maximum Safe Operating Area

Maximum Drain Current Vs. Case Temperature


TO-220 Package Dimensions



Unit: mm

Symbol	Size		Symbol	Size		Symbol	Size		Symbol	Size	
	Min	Max		Min	Max		Min	Max		Min	Max
W	9.66	10.28	W5	9.80	10.20	L4**	6.20	6.60	T3	0.45	0.60
W1	2.54 (TYP)		L	9.00	9.40	L5	2.79	3.30	G(Φ)	3.50	3.70
W2	0.70	0.95	L1	6.40	6.80	T	4.30	4.70			
W3	1.17	1.37	L2	2.70	2.90	T1	1.15	1.40			
W4*	1.32	1.72	L3	12.70	14.27	T2	2.20	2.60			