

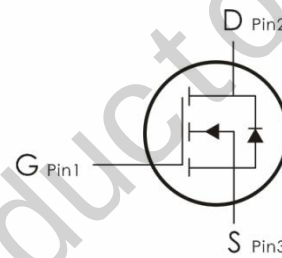
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=40V, I_D=80A, R_{DS(on)} < 6.5m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹	80	A
	Continuous Drain Current- $T_C=100^\circ C$	56	
	Pulsed Drain Current ²	350	
E_{AS}	Single Pulse Avalanche Energy ³	670	mJ
P_D	Power Dissipation ⁴	90	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	1.67	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	---	

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	40	45	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =40V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =10V, I _D =20A	---	5.3	6.5	m Ω
		V _{GS} =4.5V, I _D =A	---	---	---	
G _{FS}	Forward Transconductance	V _{DS} =10V, I _D =20A	15	---	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	4010	---	pF
C _{oss}	Output Capacitance		---	750	---	
C _{rss}	Reverse Transfer Capacitance		---	390	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V, R _L =1 Ω R _{GEN} =3 Ω . V _{GS} =10V	---	11	---	ns
t _r	Rise Time		---	10	---	ns
t _{d(off)}	Turn-Off Delay Time		---	38	---	ns
t _f	Fall Time		---	11	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =20V, I _D =20A	---	50	---	nC
Q _{gs}	Gate-Source Charge		---	12	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	13	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =10A	---	---	-1.2	V
I _S	Diode Forward Current (Note 2)	---	---	---	80	A
T _{rr}	Reverse Recovery Time	T _J = 25°C, I _F = 20A di/dt = 100A/μs ^(Note3)	---	33	---	NS
Q _{rr}	Reverse Recovery Charge		---	34	---	NC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. E_{AS} condition : $T_J=25^\circ\text{C}$, $V_{DD}=20\text{V}$, $V_G=10\text{V}$, $L=1\text{mH}$, $R_g=25\Omega$, $I_{AS}=36\text{A}$

Typical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

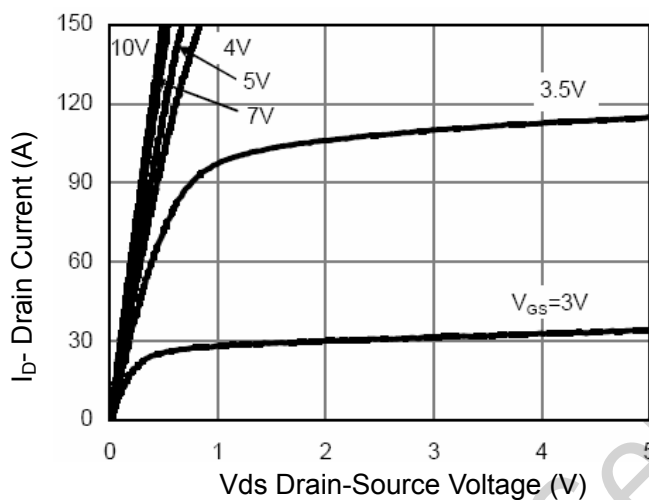


Figure 1 Output Characteristics

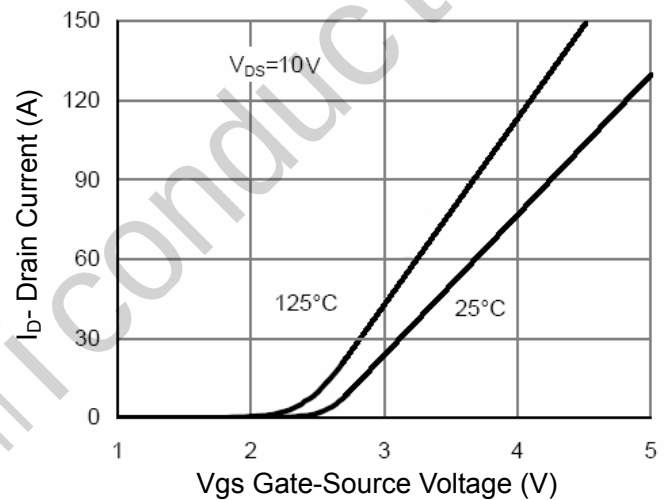


Figure 2 Transfer Characteristics

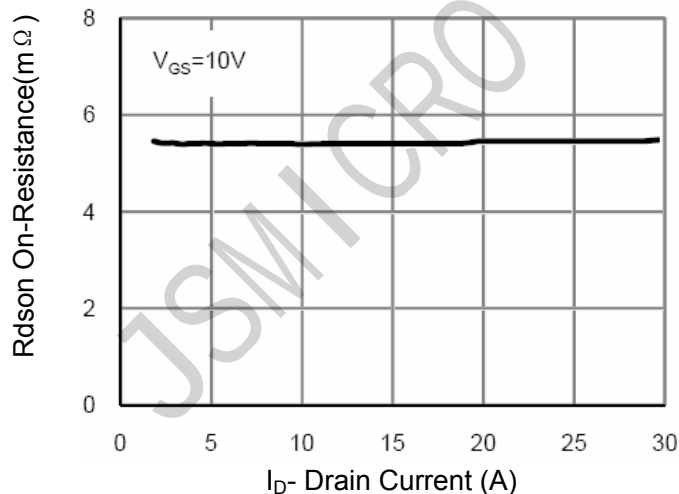


Figure 3 Rdson- Drain Current

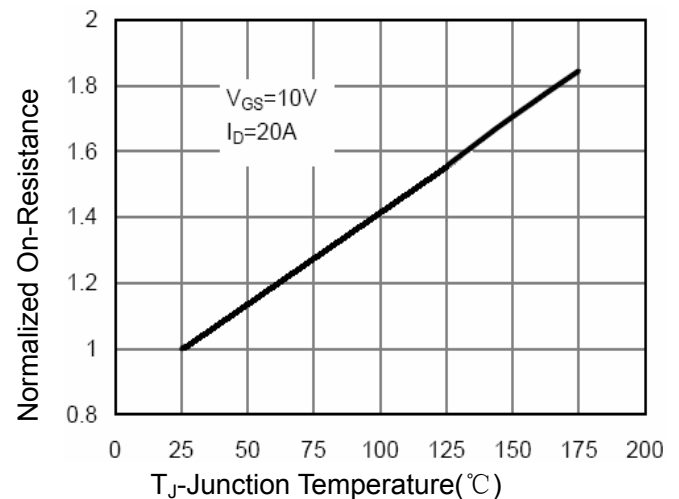
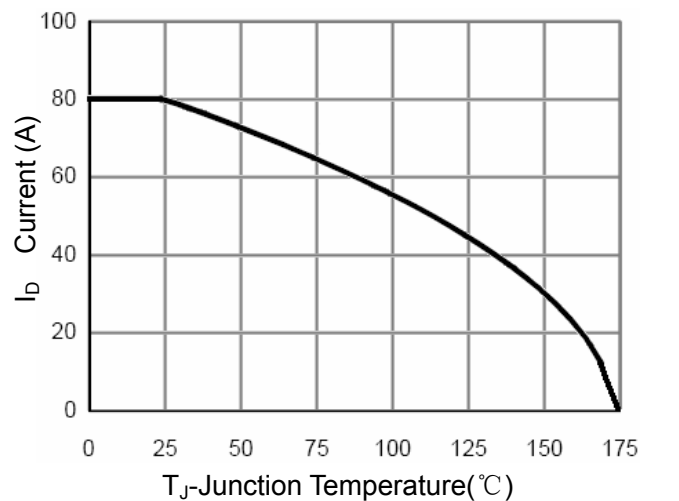
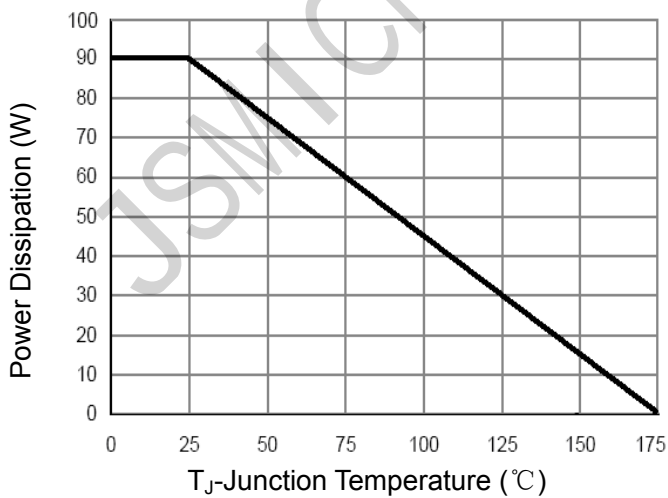
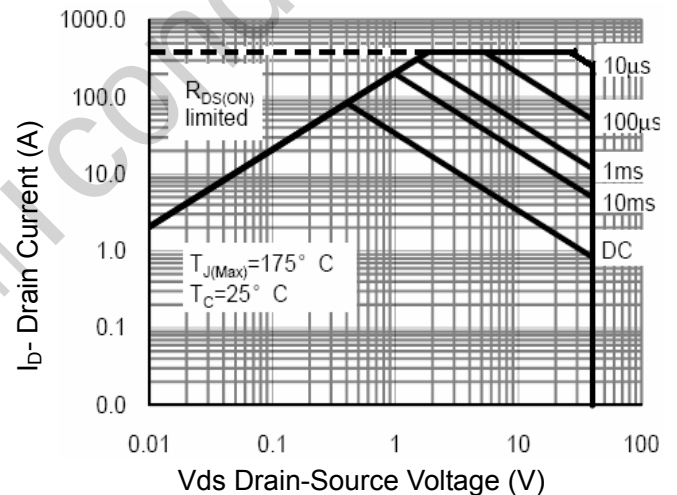
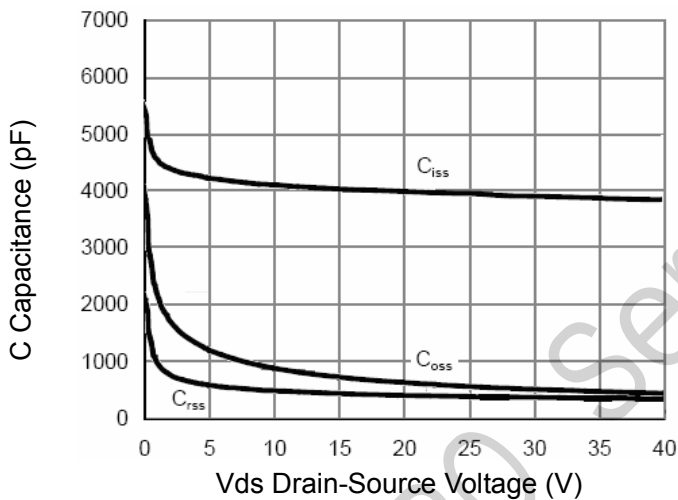
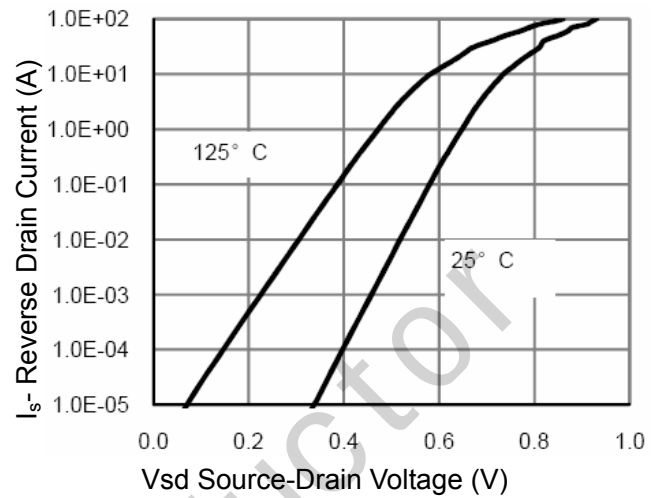
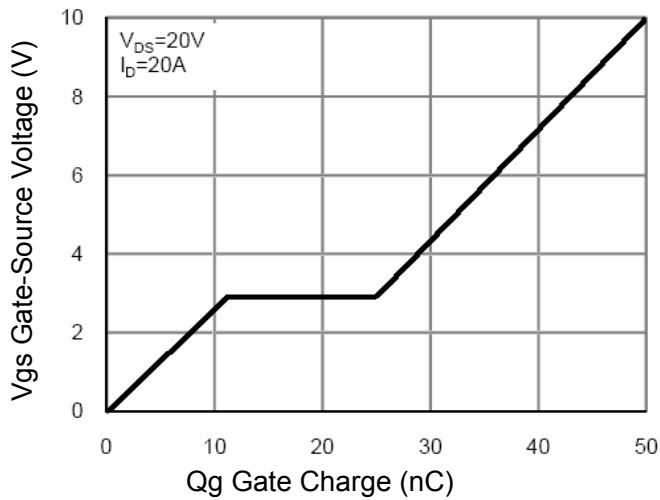


Figure 4 Rdson-Junction Temperature



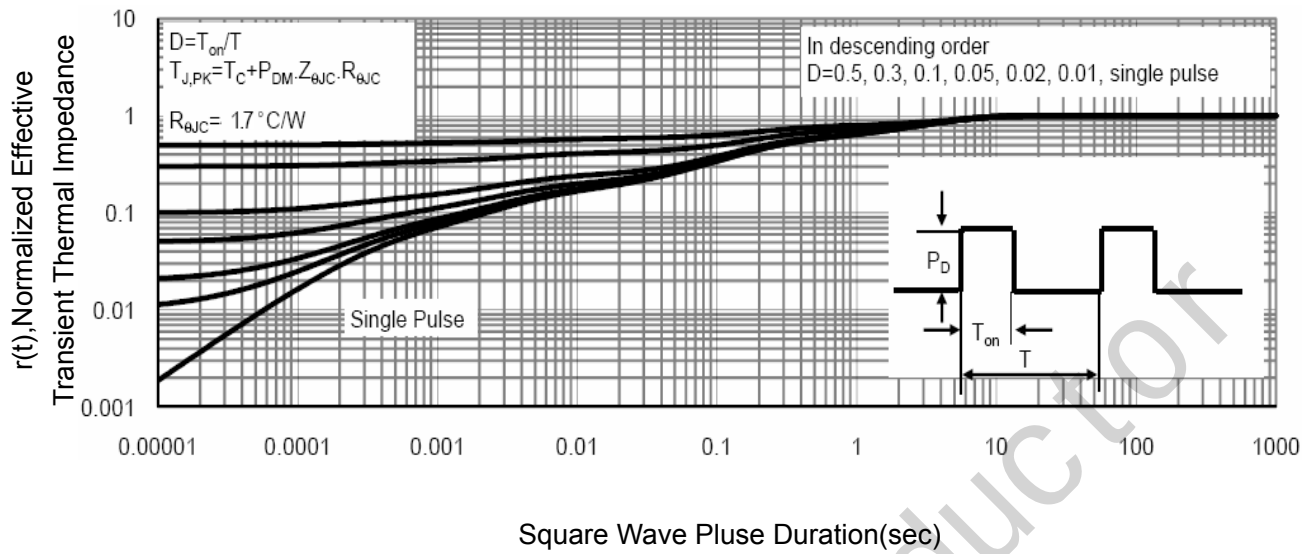
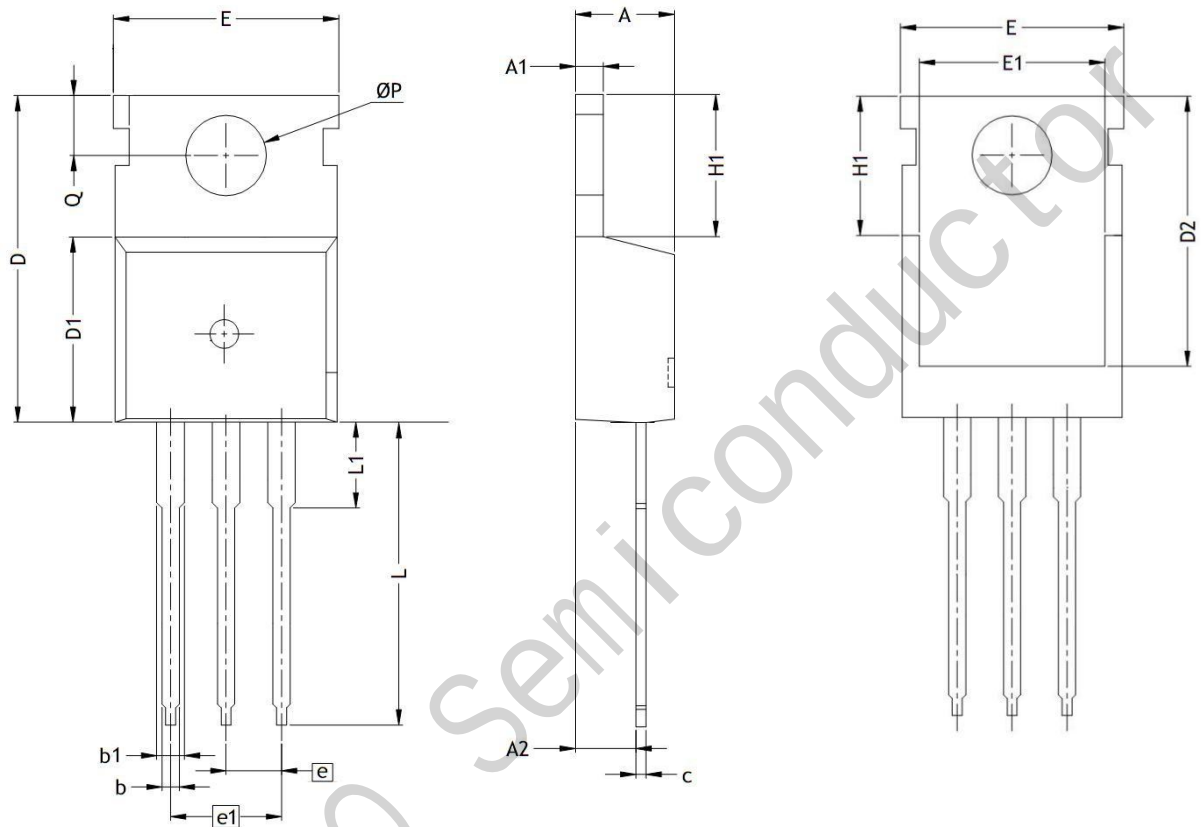


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-220 Package Information:



UNIT: mm

SYMBOLS	A	A1	A2	b	b1	c	D	D1	D2	E	E1	e
MIN	4.25	1.25	2.35	0.7	1.15	0.45	14.35	8.80	13.05	9.90	7.85	2.540
MAX	4.65	1.35	2.55	0.9	1.75	0.60	15.95	9.50	13.65	10.35	8.85	BSC
SYMBOLS	e1	H1	L	L1	Q	ØP						
MIN	5.080	6.30	12.85	2.85	2.70	3.50						
MAX	BSC	6.65	13.50	3.25	2.90	3.70						