

# N-Channel Enhancement Mode MOSFET

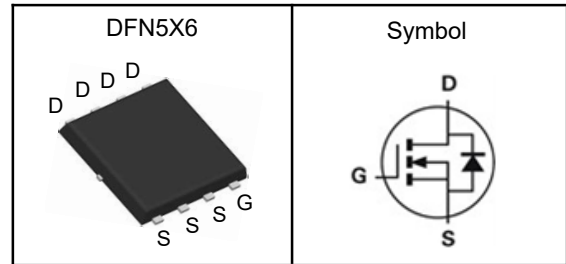
## Features

- Advanced SGT technology
- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

## Applications

- Power Management in Desktop Computer
- DC/DC Converters

## Pin Description



$V_{DSS}$	150	V
$R_{DS(ON)-Typ}$	9.5	m $\Omega$
$I_D$	75	A

## Absolute Maximum Ratings ( $T_C=25^{\circ}C$ , Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	150	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$T_J$	Maximum Junction Temperature	-55 to 150	$^{\circ}C$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^{\circ}C$
$I_{DM}^{①}$	Pulse Drain Current Tested	300	A
$I_D$	Continuous Drain Current	75	A
$P_D$	Maximum Power Dissipation	125	W
$E_{AS}$	Avalanche Energy, Single pulse	205	mJ

## Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	54	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1	$^{\circ}C/W$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^{\circ}C$ .

Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.



**N-Channel Enhancement Mode MOSFET**

**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=150V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	---	4.0	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=20A$	---	9.5	11.5	m $\Omega$
<b>Dynamic Characteristics<sup>⑤</sup></b>						
$g_{FS}$	Gate Resistance	$V_{DS}=10V, I_D=20A$	---	69	---	S
$C_{iss}$	Input Capacitance	$V_{DS}=75V, V_{GS}=0V,$ $Freq.=1MHz$	---	3350	---	pF
$C_{oss}$	Output Capacitance		---	268	---	
$C_{rss}$	Reverse Transfer Capacitance		---	9.4	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=75V, V_{GS}=10V,$ $I_D=20A, R_G=3\Omega$	---	16	---	nS
$T_r$	Turn-on Rise Time		---	12	---	
$T_{d(off)}$	Turn-off Delay Time		---	30	---	
$T_f$	Turn-off Fall Time		---	18	---	
$Q_g$	Total Gate Charge	$V_{DS}=75V, V_{GS}=10V,$ $I_D=20A$	---	46	---	nC
$Q_{gs}$	Gate-Source Charge		---	15	---	
$Q_{gd}$	Gate-Drain Charge		---	8.5	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	---	---	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_F=20A, V_{GS}=0V,$ $di_F/dt=100A/\mu s$	---	76	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	182	---	nC

Note ④: Pulse test (pulse width $\leq$ 300 $\mu s$ , duty cycle $\leq$ 2%).

Note ⑤: Guaranteed by design, not subject to production testing.

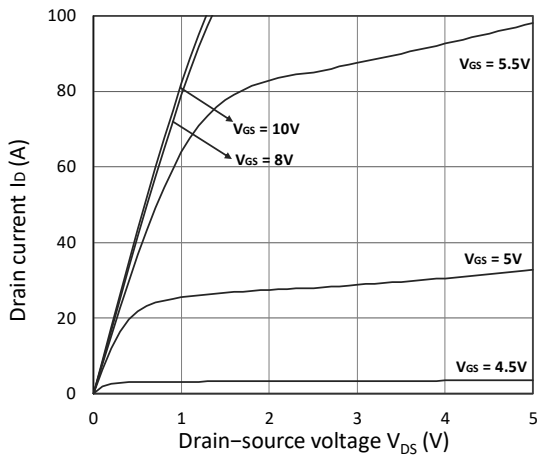
**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**


Figure 1. Output Characteristics

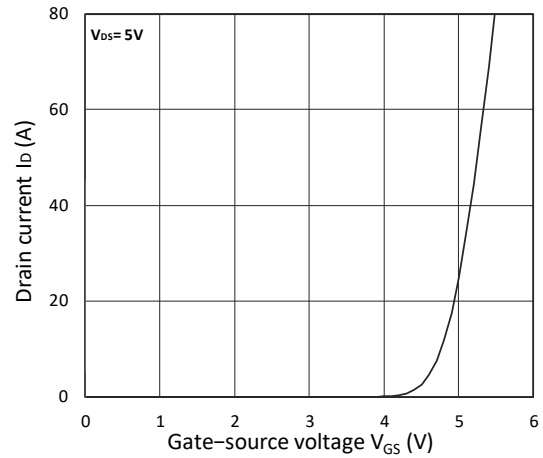


Figure 2. Transfer Characteristics

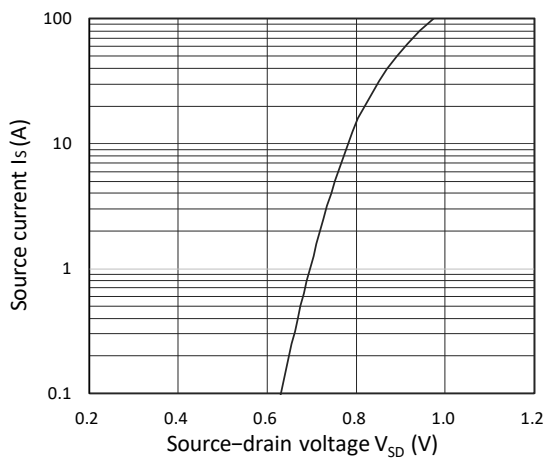
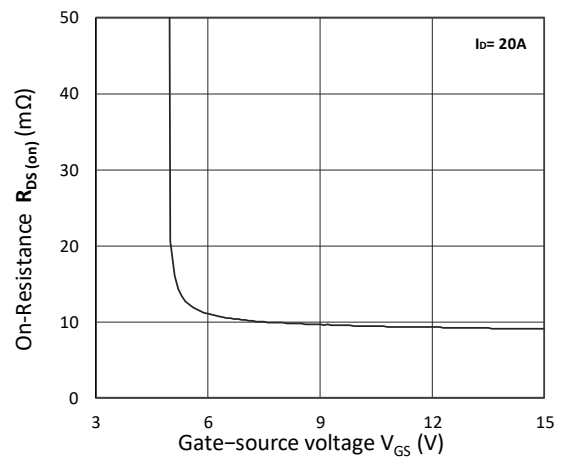
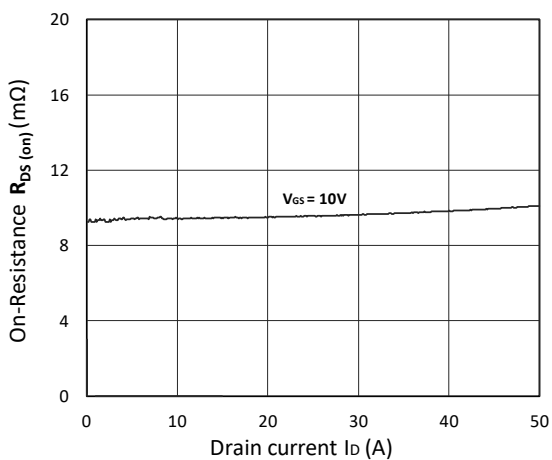
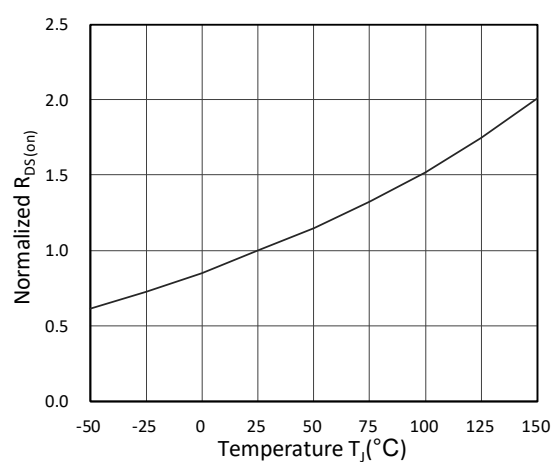


Figure 3. Forward Characteristics of Reverse


 Figure 4.  $R_{DS(ON)}$  vs.  $V_{GS}$ 

 Figure 5.  $R_{DS(ON)}$  vs.  $I_D$ 

 Figure 6. Normalized  $R_{DS(ON)}$  vs. Temperature

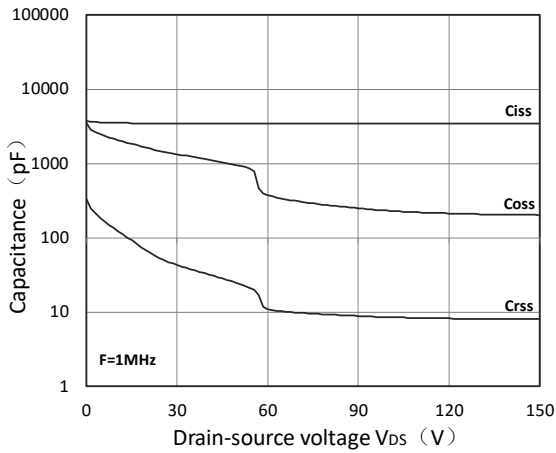
**N-Channel Enhancement Mode MOSFET**


Figure 7. Capacitance Characteristics

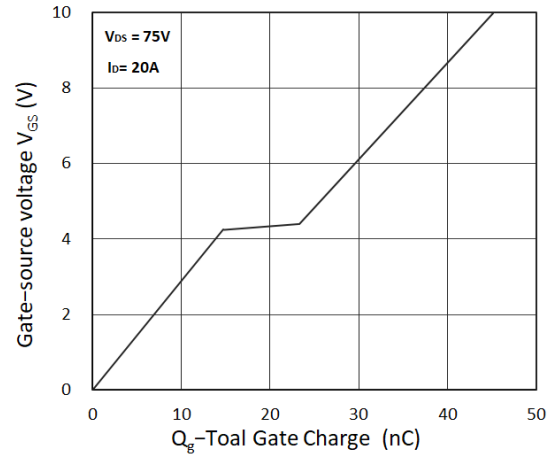


Figure 8. Gate Charge Characteristics

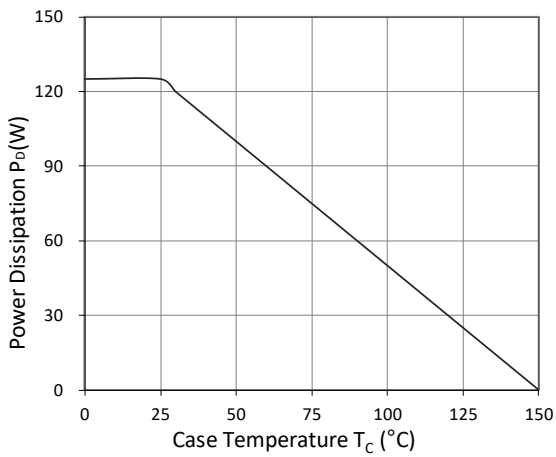


Figure 9. Power Dissipation

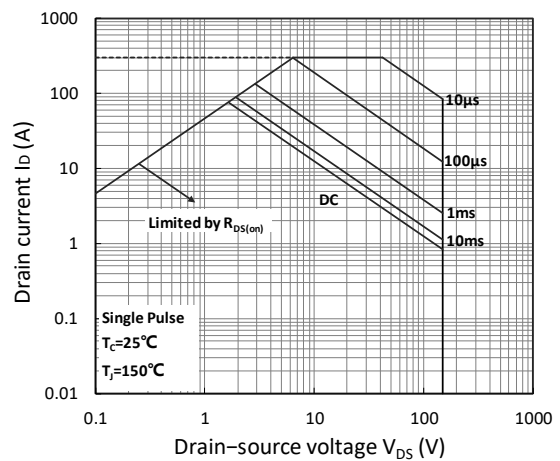


Figure 10. Safe Operating Area

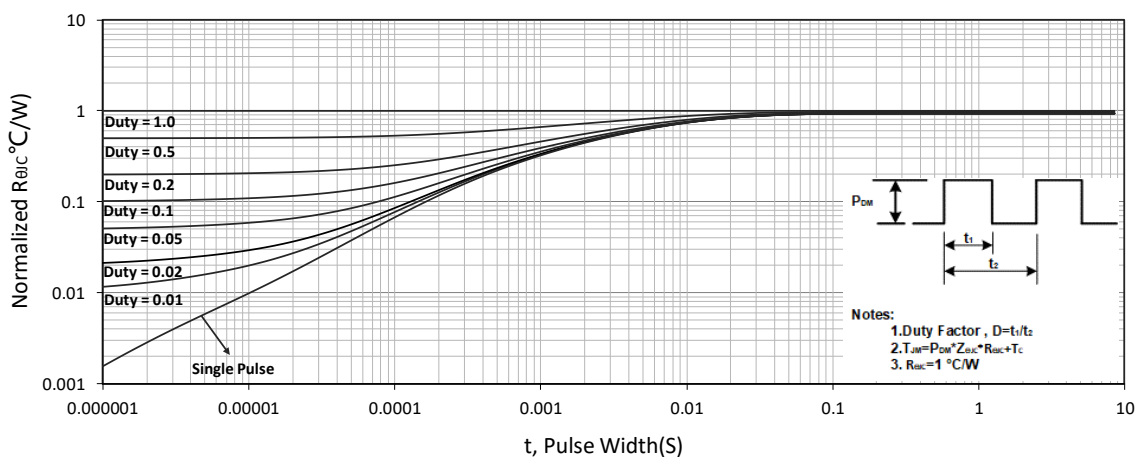
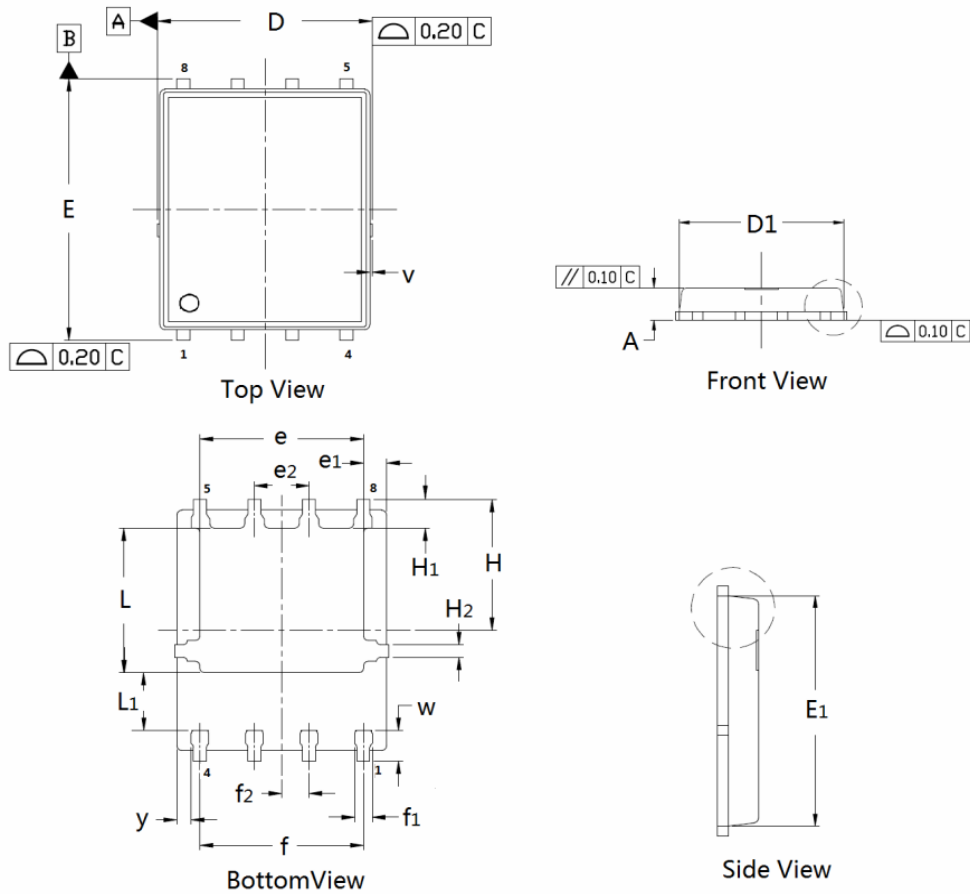


Figure 11. Normalized Maximum Transient Thermal Impedance

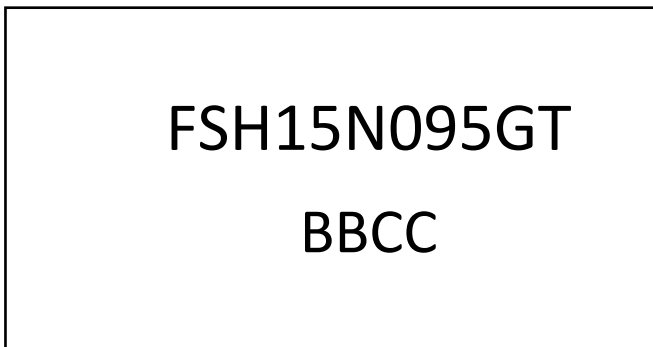
**N-Channel Enhancement Mode MOSFET**
**DFN5×6 Package Outline Data**

**DIMENSIONS ( unit : mm )**

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.02	1.10	D	4.90	4.98	5.10
D <sub>1</sub>	4.80	4.89	5.10	E	5.90	6.11	6.25
E <sub>1</sub>	5.65	5.74	5.95	e	3.72	3.80	3.92
e <sub>1</sub>	--	0.5	--	e <sub>2</sub>	--	1.	--
f	--	3.8	--	f <sub>1</sub>	0.31	0.37	0.51
f <sub>2</sub>	--	0.6	--	H	--	3.	--
H <sub>1</sub>	0.59	0.63	0.79	H <sub>2</sub>	0.26	0.28	0.32
L	3.35	3.45	3.65	L <sub>1</sub>	--	1.	--
v	--	0.1	--	w	0.64	0.68	0.84
y	--	0.3	--		--		--



## 印字说明

### 印字说明



第一行标记为物料型号代码

第二行BB为表示年份，例如22即表示2022年，CC表示周期，例如01即表示第一周; 2201即表示2022年第一周生产。