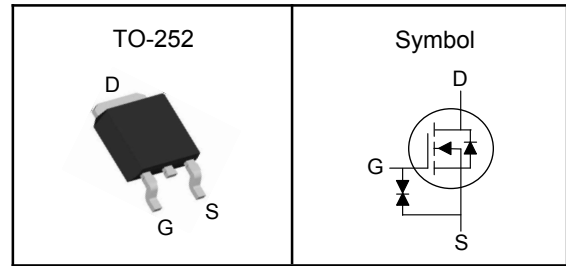


**800V Super Junction Power MOSFET**
**Features**

- Low drain-source on-resistance:  $R_{DS(ON)}=0.74\Omega$  (typ)
- Easy to control gate switching
- Enhancement mode:  $V_{th} = 2$  to  $4V$
- 100% avalanche tested
- RoHS compliant

**Applications**

- Switch Mode Power Supply (SMPS)
- TV power & LED Lighting Power
- AC to DC Converters
- Telecom

**Pin Description**


$V_{DSS}$	800	V
$R_{DS(ON)-Typ}$	740	m $\Omega$
$I_D$	6.6	A

**Absolute Maximum Ratings** ( $T_J=25^\circ C$ , Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
$V_{DSS}$	Drain-Source Voltage	800	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	$^\circ C$
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	84	mJ
$I_{DM}^{①}$	Pulse Drain Current Tested	19.8	A
$I_D$	Continuous Drain Current	$T_C=25^\circ C$	A
$P_D$	Maximum Power Dissipation	$T_C=25^\circ C$	W

**Thermal Characteristics**

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	1.9	$^\circ C/W$

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  $1in^2$  FR-4 board with 1oz.



**800V Super Junction Power 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	$V_{GS}=0V, I_D=250\mu A$	800	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=800V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=220\mu A$	2	---	4	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 1$	$\mu A$
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=1.6A$	---	740	850	$m\Omega$
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=500V,$ Freq.=1MHz	---	635	---	pF
$C_{oss}$	Output Capacitance		---	14.6	---	
$C_{rss}$	Reverse Transfer Capacitance		---	2.5	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=400V, V_{GS}=25V,$ $I_D=2.8A$	---	23	---	nS
$T_r$	Turn-on Rise Time		---	18	---	
$T_{d(off)}$	Turn-off Delay Time		---	74	---	
$T_f$	Turn-off Fall Time		---	17	---	
$Q_g$	Total Gate Charge	$V_{DS}=640V, V_{GS}=10V,$ $I_D=2.8A$	---	13.7	---	nC
$Q_{gs}$	Gate-Source Charge		---	2.9	---	
$Q_{gd}$	Gate-Drain Charge		---	4.2	---	
<b>Source-Drain Characteristics</b> ( $T_J=25^{\circ}\text{C}$ )						
$V_{SD}$ <sup>④</sup>	Diode Forward Voltage	$I_S=2.8A, V_{GS}=0V$	---	---	1.3	V
$t_{rr}$	Reverse Recovery Time	$V_R=400V, I_F=2.8A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	170	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	1.1	---	nC

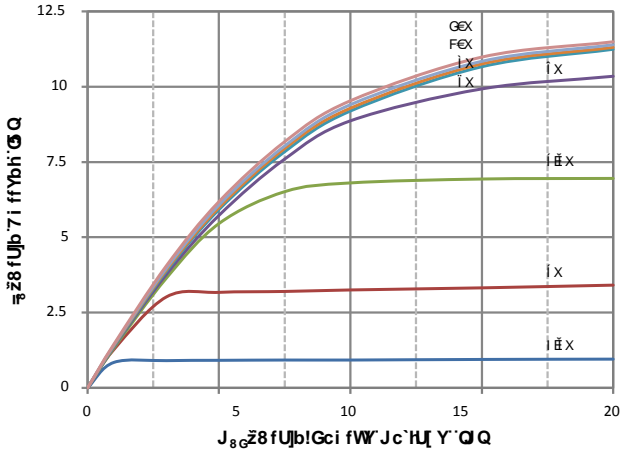
Note ④ : Pulse test (pulse width $\leq$ 300us, duty cycle $\leq$ 2%).

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

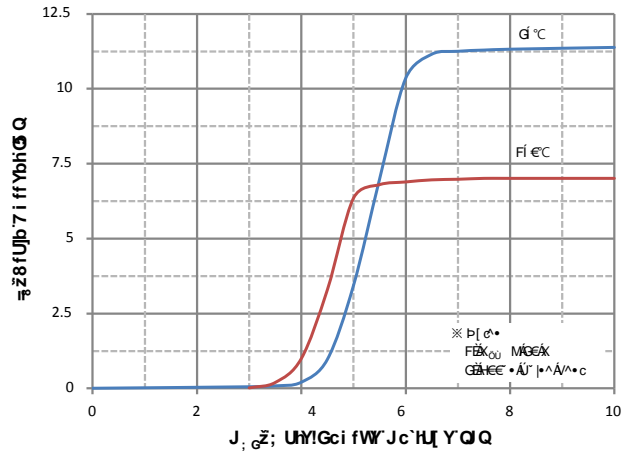


800V Super Junction Power MOSFET

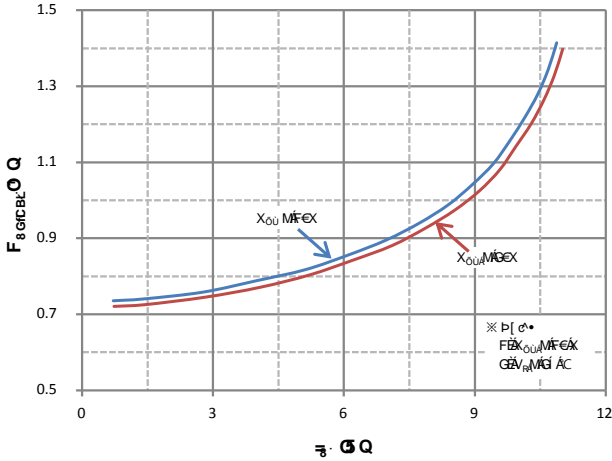
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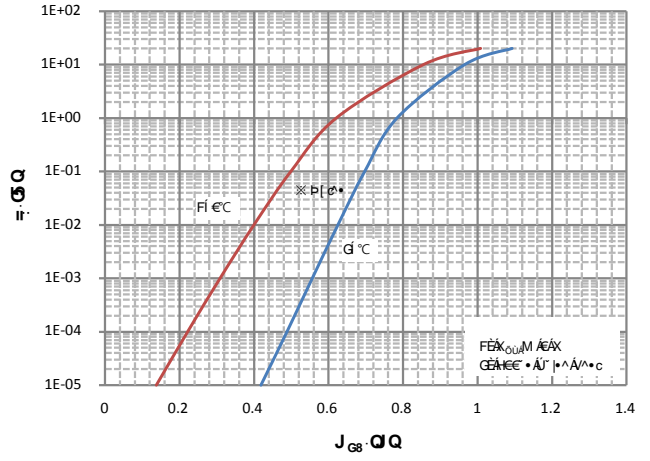
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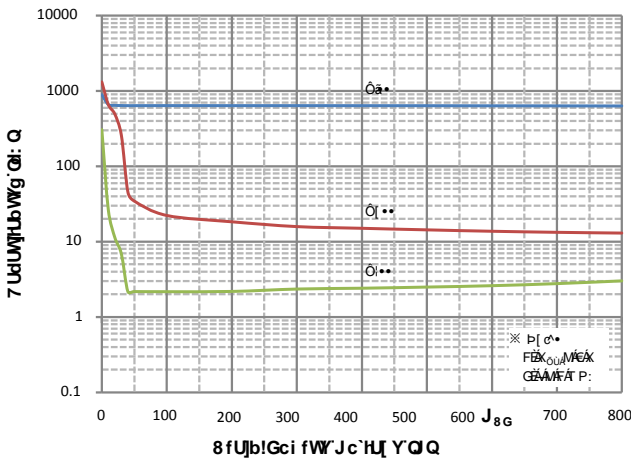
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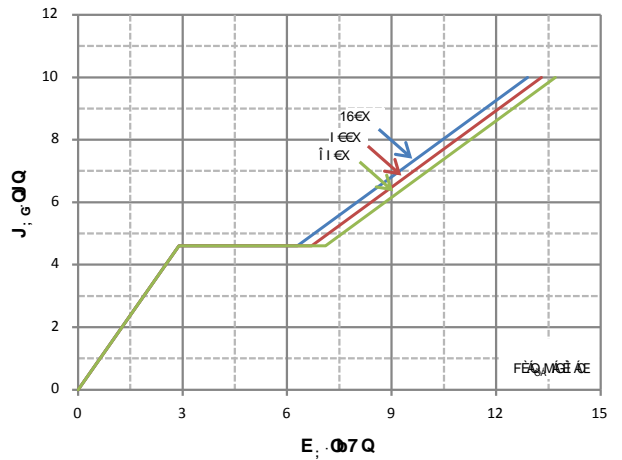
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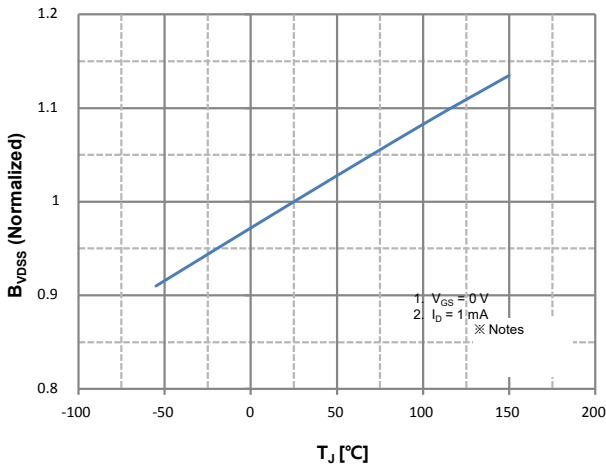
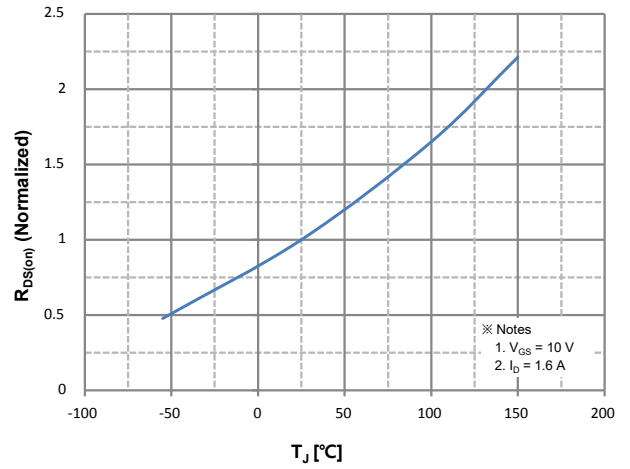
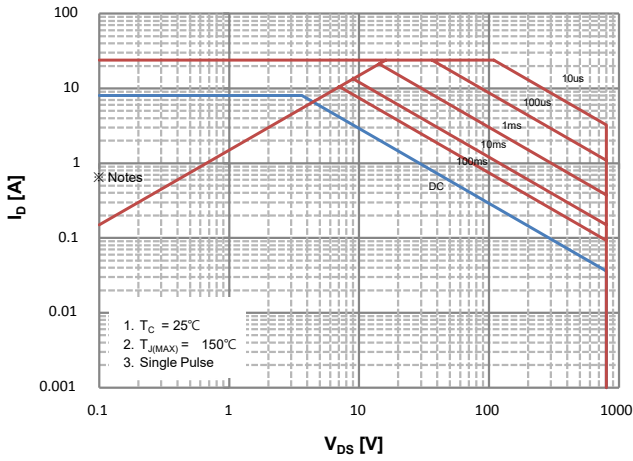
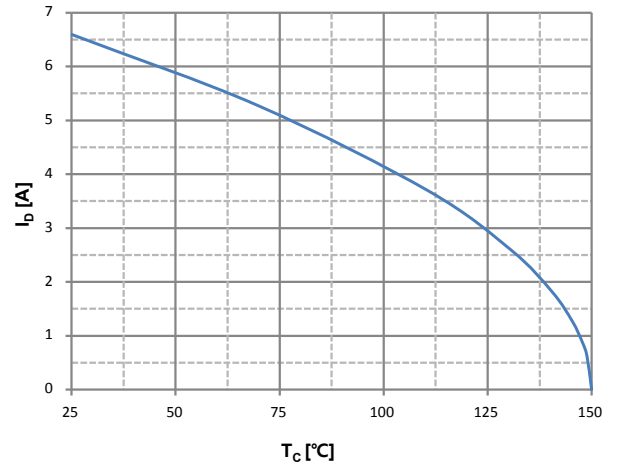
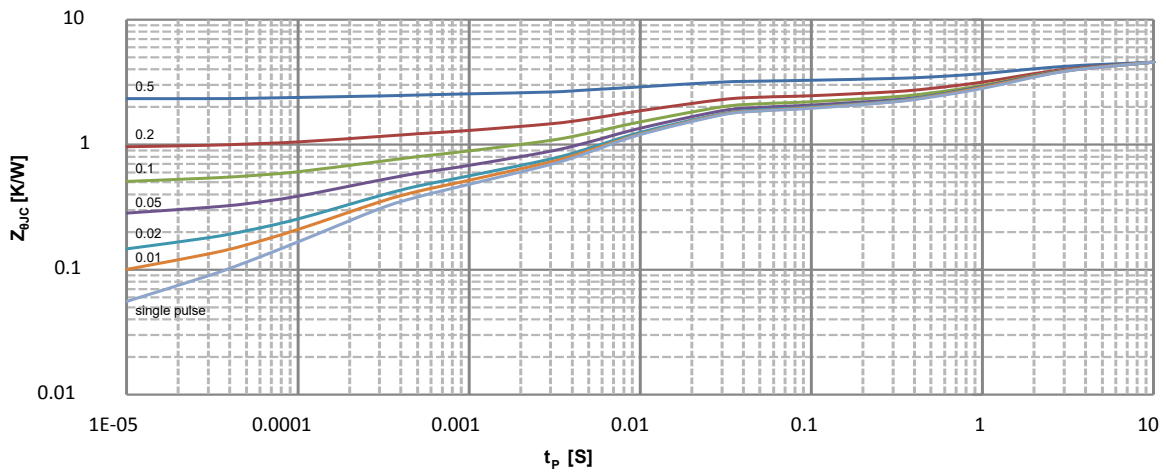
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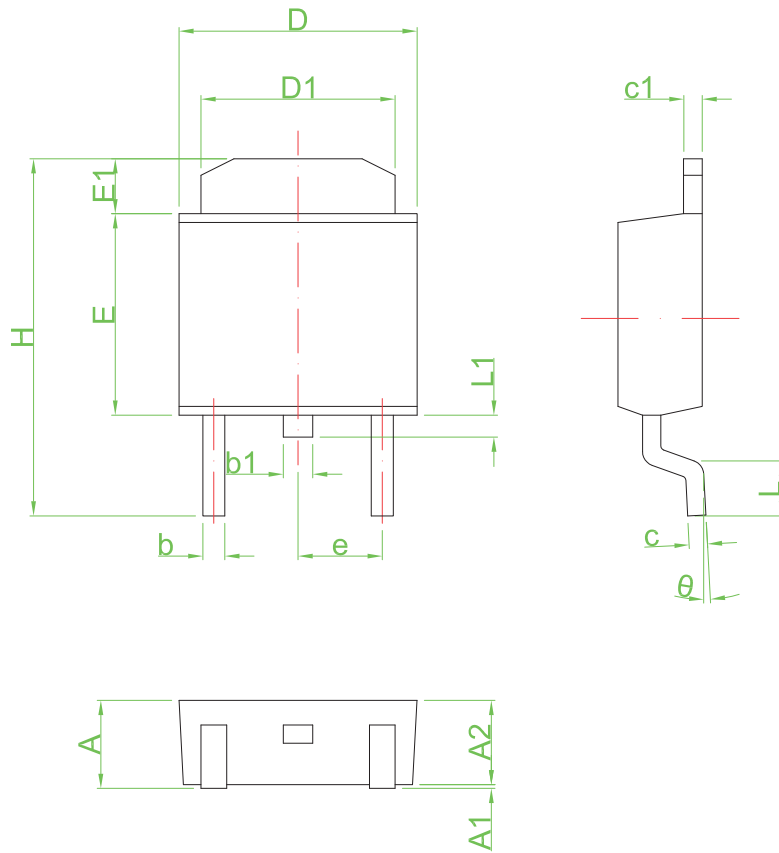


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**800V Super Junction Power MOSFET**

**Figure 7. Breakdown Voltage Variation vs. Temperature**

**Figure 8. On-Resistance Variation vs. Temperature**

**Figure 9. Maximum Safe Operating Area**

**Figure 10. Maximum Drain Current vs. Case Temperature**

**Figure 11. Transient Thermal Response Curve**

**800V Super Junction Power MOSFET**
**TO-252 Package Outline Dimensions**


Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	2.25	2.65	0.089	0.104
A1	0.00	0.15	0.000	0.006
A2	2.20	2.40	0.087	0.094
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.46	0.66	0.018	0.026
c1	0.46	0.66	0.018	0.026
D	6.30	6.70	0.248	0.264
D1	5.20	5.40	0.205	0.213
E	5.30	5.70	0.209	0.224
E1	1.40	1.60	0.055	0.063
H	9.40	9.90	0.370	0.390
e	2.30 TYP		0.09 TYP	
L	1.40	1.77	0.055	0.070
L1	0.50	0.70	0.020	0.028
theta	0°	8°	0°	8°