



## N-Channel Enhancement Mode Field Effect Transistor

### PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
33V	27A	4.6 @ V <sub>GS</sub> =10V
		6.9 @ V <sub>GS</sub> =4.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Surface Mount Package.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Limit	Units
V <sub>DS</sub>	Drain-Source Voltage	33	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Drain Current-Continuous	27	A
I <sub>DM</sub>	-Pulsed <sup>a</sup>	90	A
P <sub>D</sub>	Maximum Power Dissipation	1.67	W
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 to 150	°C

### THERMAL CHARACTERISTICS

R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	75	°C/W
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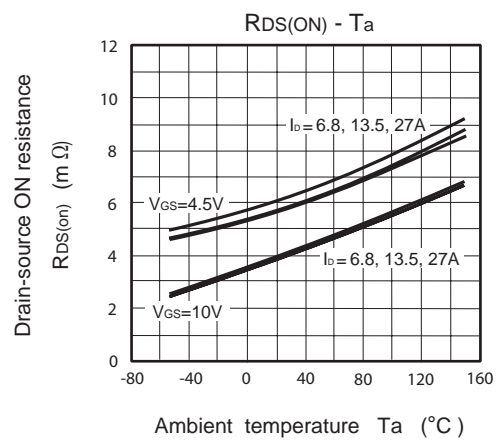
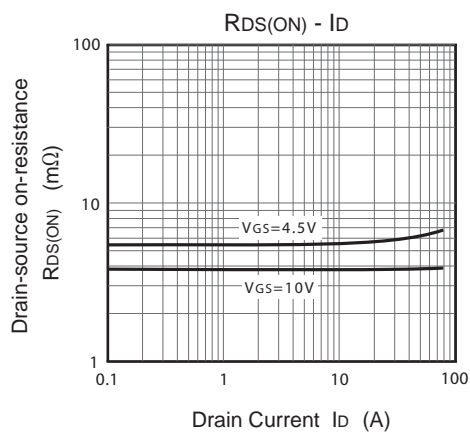
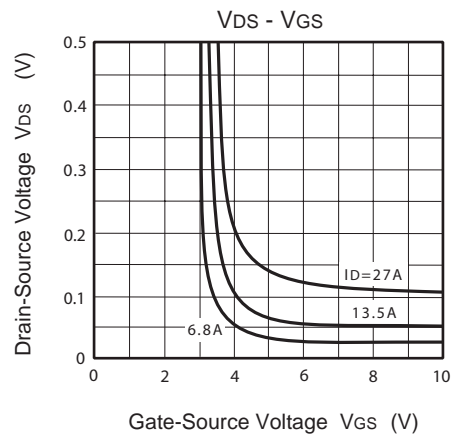
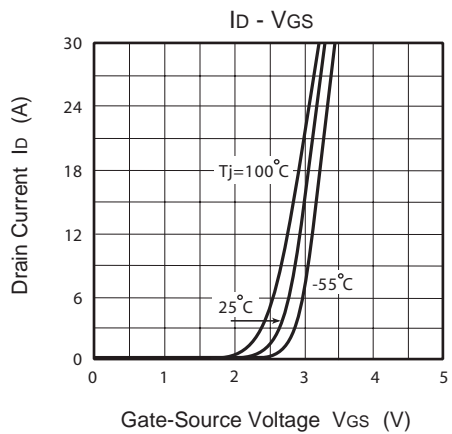
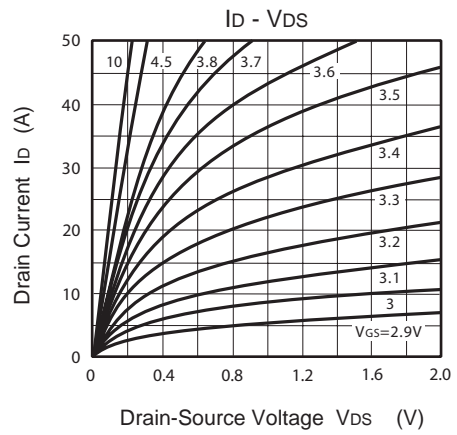
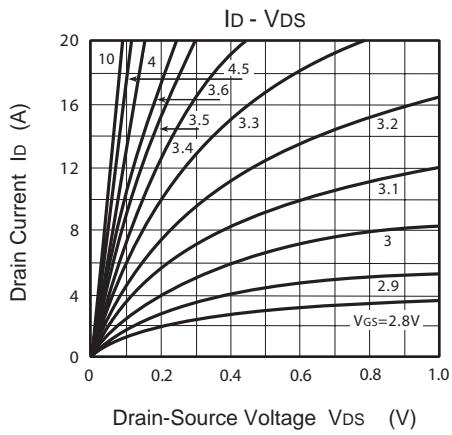
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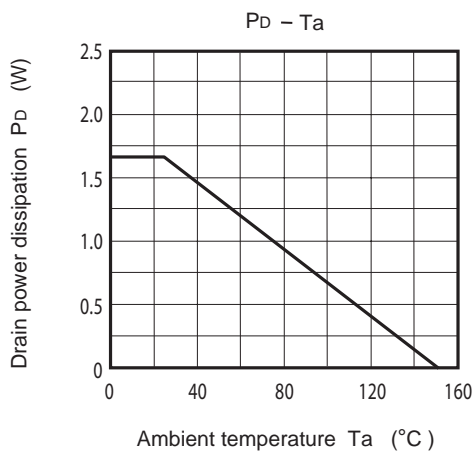
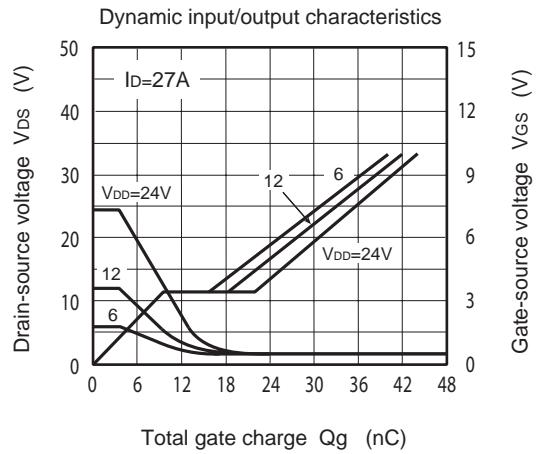
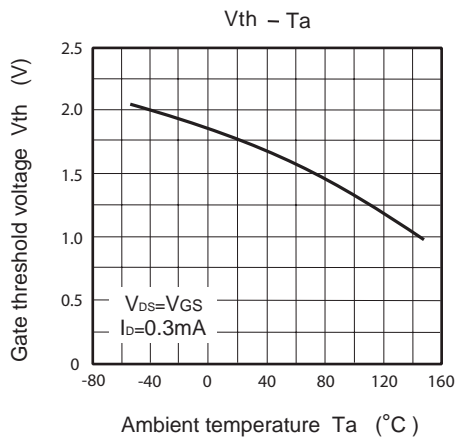
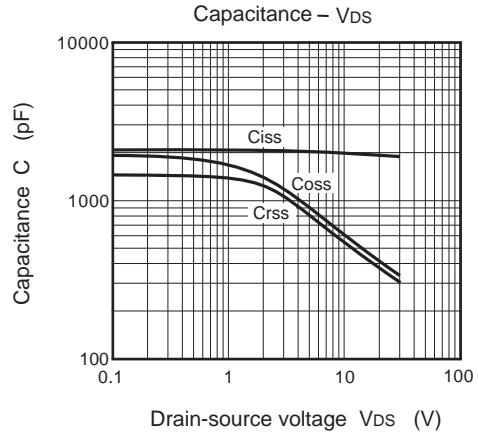
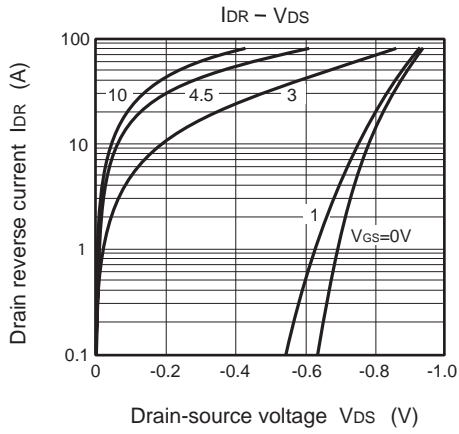
Ver 2.1

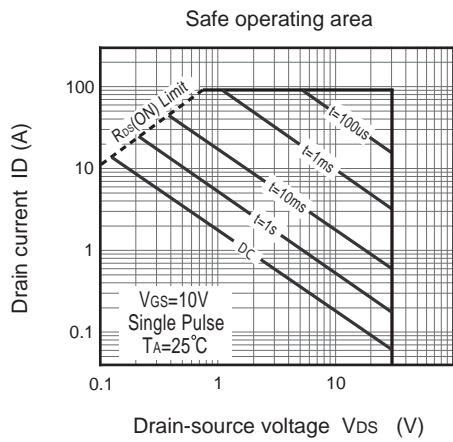
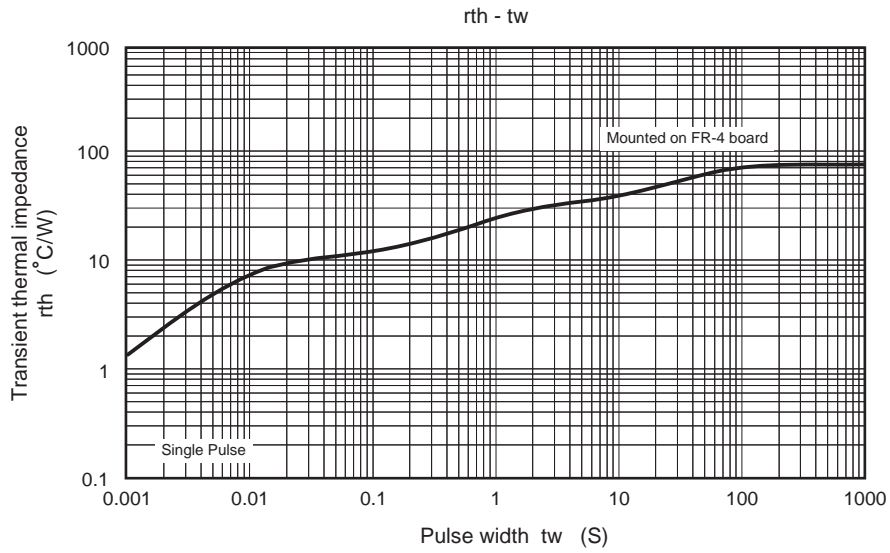
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =10mA	33			V
BV <sub>DSX</sub>		V <sub>GS</sub> =-20V, I <sub>D</sub> =10mA	18			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =33V, V <sub>GS</sub> =0V			10	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = ±16V, V <sub>DS</sub> =0V			±100	nA
<b>ON CHARACTERISTICS</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =0.3mA	1	1.7	3	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =13.5A		3.8	4.6	m ohm
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =13.5A		5.6	6.9	m ohm
<b>DYNAMIC CHARACTERISTICS<sup>b</sup></b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V f=1.0MHz		2000		pF
C <sub>OSS</sub>	Output Capacitance			600		pF
C <sub>RSS</sub>	Reverse Transfer Capacitance			550		pF
<b>SWITCHING CHARACTERISTICS<sup>b</sup></b>						
t <sub>D(ON)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V I <sub>D</sub> =13.5A V <sub>GS</sub> =10V R <sub>GEN</sub> = 4.7 ohm		41		ns
t <sub>r</sub>	Rise Time			78		ns
t <sub>D(OFF)</sub>	Turn-Off Delay Time			72		ns
t <sub>f</sub>	Fall Time			60		ns
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =24V, I <sub>D</sub> =13.5A, V <sub>GS</sub> =10V		46		nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =24V, I <sub>D</sub> =13.5A, V <sub>GS</sub> =10V		9.5		nC
Q <sub>gd</sub>	Gate-Drain Charge			13		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =27A		0.83	1.3	V
<b>Notes</b>						
a.Pulse Test:Pulse Width < 300us, Duty Cycle < 2%.						
b.Guaranteed by design, not subject to production testing.						

Jul,18,2013

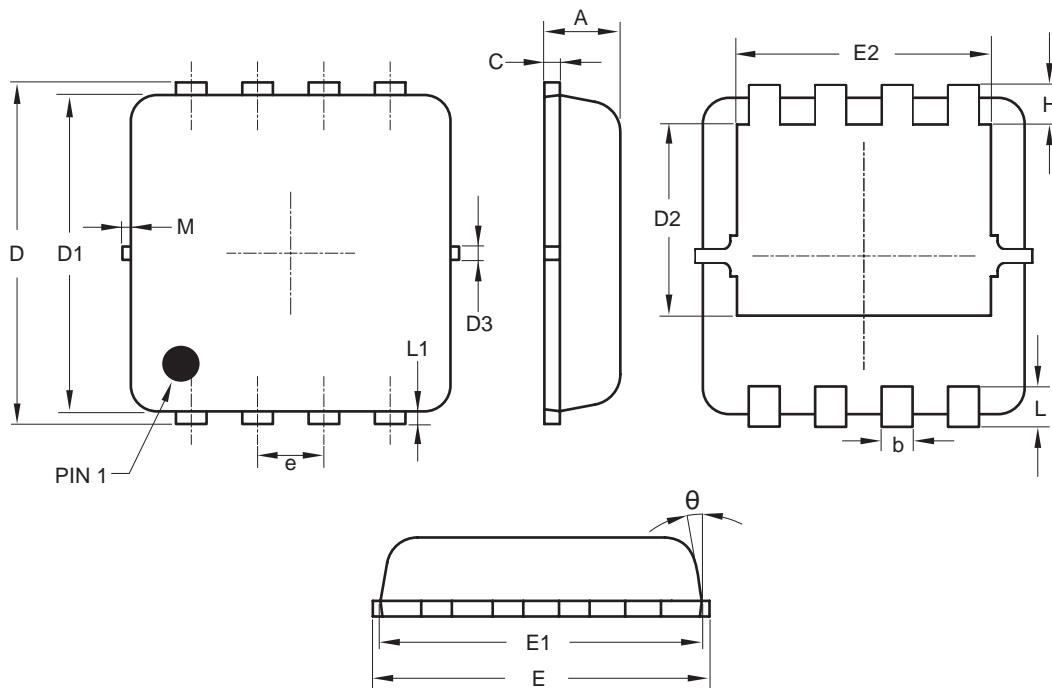






## PACKAGE OUTLINE DIMENSIONS

### TSON 3.3 x 3.3



SYMBOLS	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
C	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	—	0.13	—
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	—	0.13	—
M	—	—	0.15
θ	—	10°	12°