



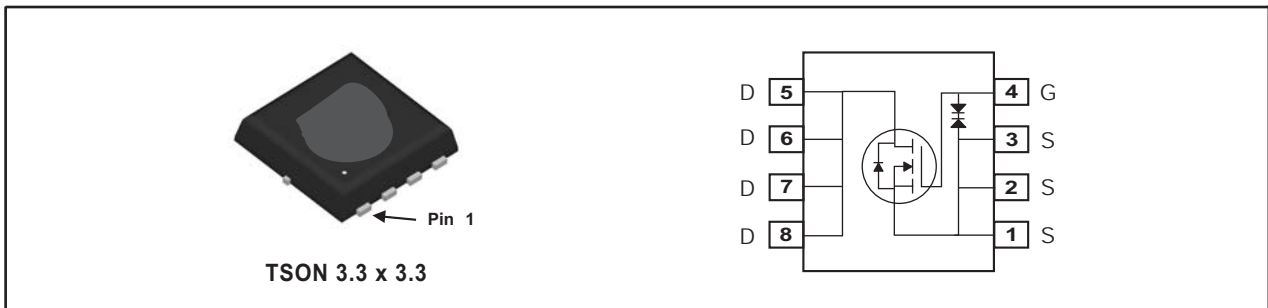
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Typ
33V	27A	4.0 @ V _{GS} =10V
		4.5 @ V _{GS} =6V
		5.5 @ V _{GS} =4.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Symbol	Parameter	Limit	Units
V _{DS}	Drain-Source Voltage	33	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous ^c	T _A =25°C	15.6
		T _A =70°C	12.5
		T _C =25°C	27
		T _C =70°C	21.6
I _{DM}	-Pulsed ^{a c}	T _A =25°C	81
		T _C =25°C	200
P _D	Maximum Power Dissipation	T _A =25°C	1.67
		T _A =70°C	1.07
		T _C =25°C	30
		T _C =70°C	19
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C

THERMAL CHARACTERISTICS

R _{θJA}	Thermal Resistance, Junction-to-Ambient	75	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case	4.2	°C/W

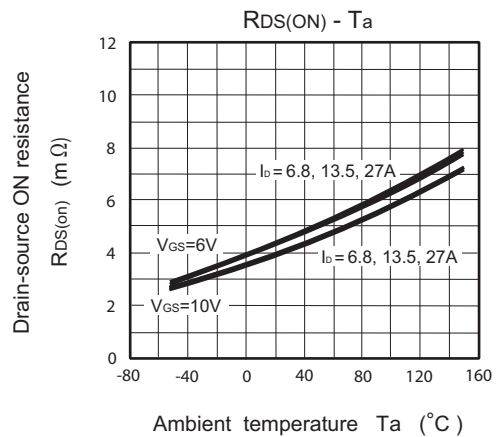
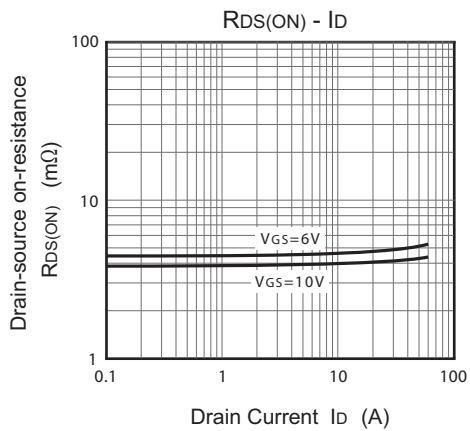
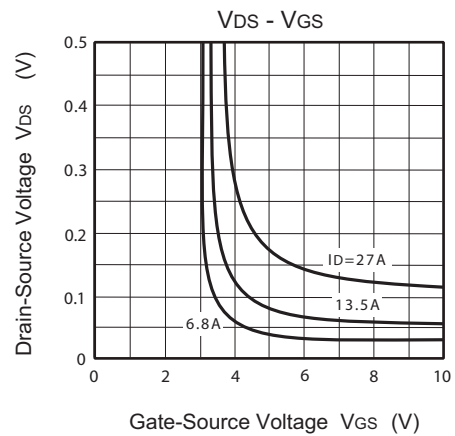
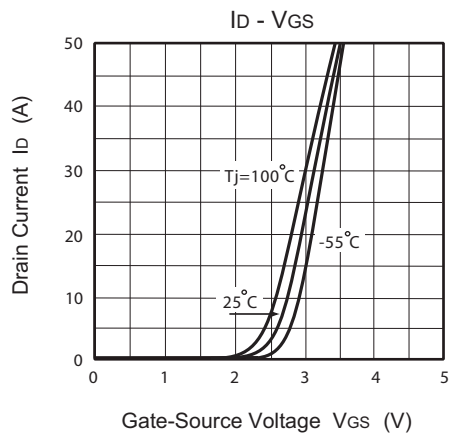
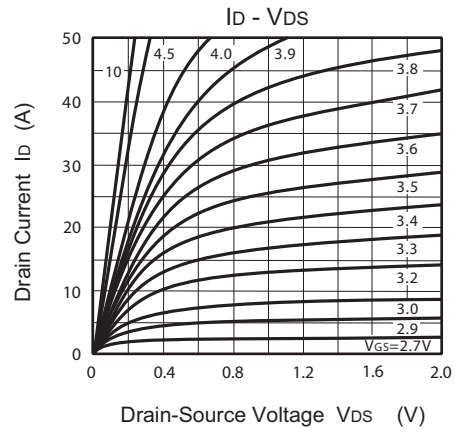
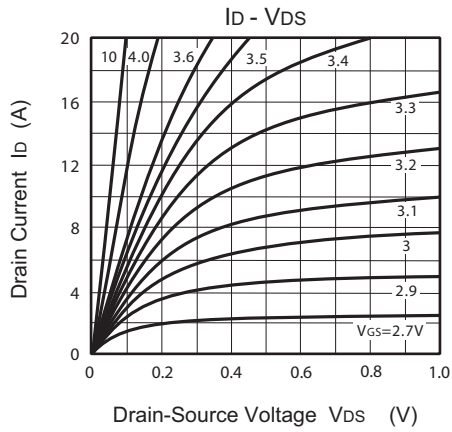
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Ver 1.6

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise noted)

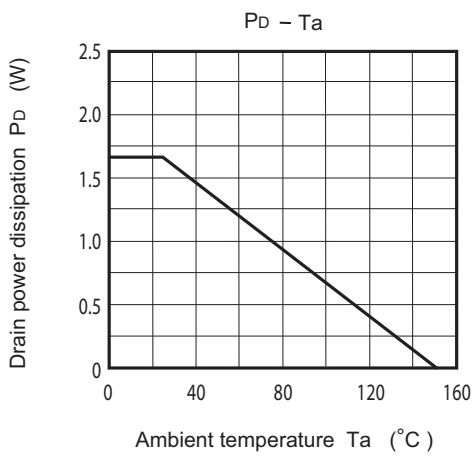
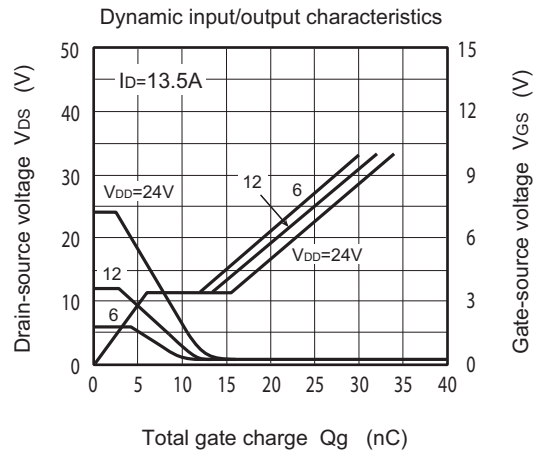
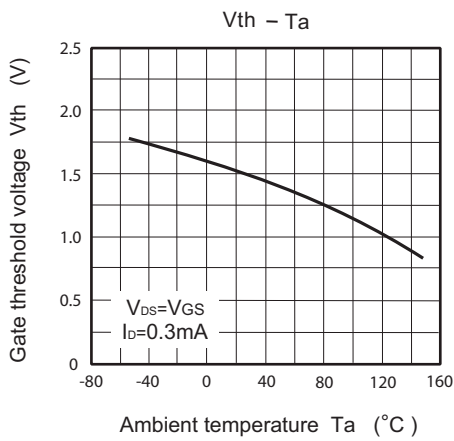
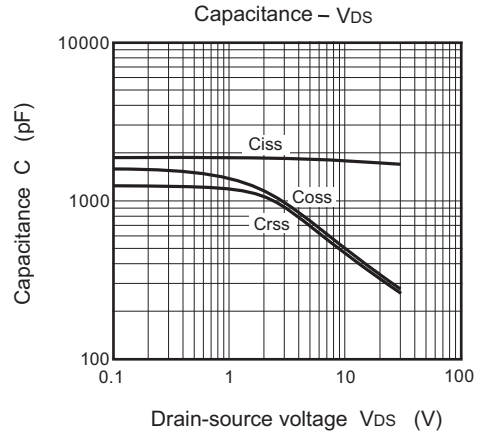
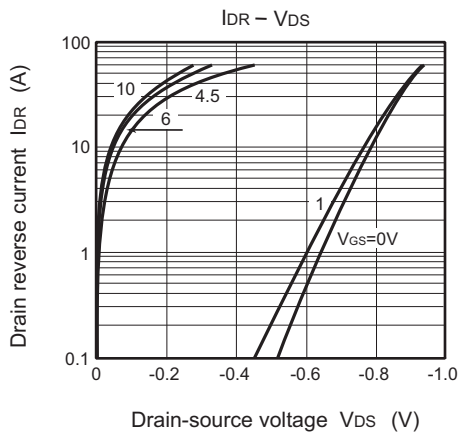
Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =10mA	33			V
BV _{DSX}		V _{GS} =-20V , I _D =10mA	18			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =33V , V _{GS} =0V			10	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±10	uA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =0.3mA	1.0	1.5	2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =13.5A		4.0	4.8	m ohm
		V _{GS} =6V , I _D =13.5A		4.5	5.6	m ohm
		V _{GS} =4.5V , I _D =13.5A		5.5	6.9	m ohm
DYNAMIC CHARACTERISTICS ^b						
C _{ISS}	Input Capacitance	V _{DS} =10V, V _{GS} =0V f=1.0MHz		1660		pF
C _{OSS}	Output Capacitance			498		pF
C _{RSS}	Reverse Transfer Capacitance			456		pF
SWITCHING CHARACTERISTICS ^b						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =15V I _D =13.5A V _{GS} =10V R _{GEN} = 4.7 ohm		35		ns
t _r	Rise Time			63		ns
t _{D(OFF)}	Turn-Off Delay Time			61		ns
t _f	Fall Time			46		ns
Q _g	Total Gate Charge	V _{DS} =24V, I _D =13.5A, V _{GS} =10V		34		nC
Q _{gs}	Gate-Source Charge	V _{DS} =24V, I _D =13.5A, V _{GS} =10V		6		nC
Q _{gd}	Gate-Drain Charge			9.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =27A		0.84	1.3	V
<p>Notes</p> <p>a. Pulse Test: Pulse Width ≤ 10us, Duty Cycle ≤ 1%.</p> <p>b. Guaranteed by design, not subject to production testing.</p> <p>c. Drain current limited by maximum junction temperature.</p> <p>d. Mounted on FR4 Board of 1 inch² , 2oz.</p>						

Nov,30,2020

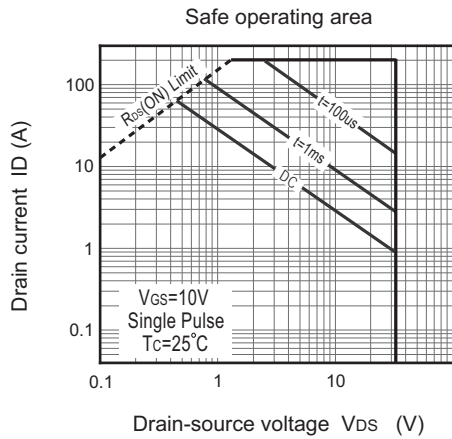
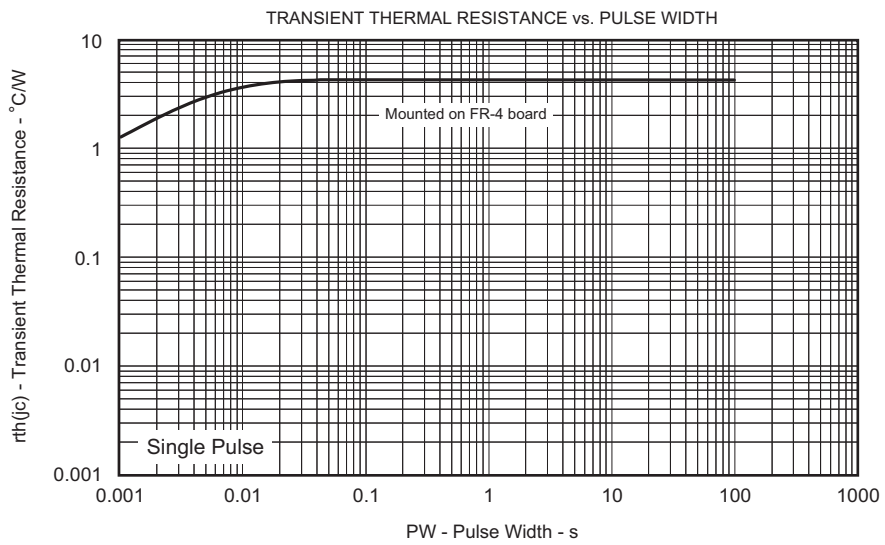
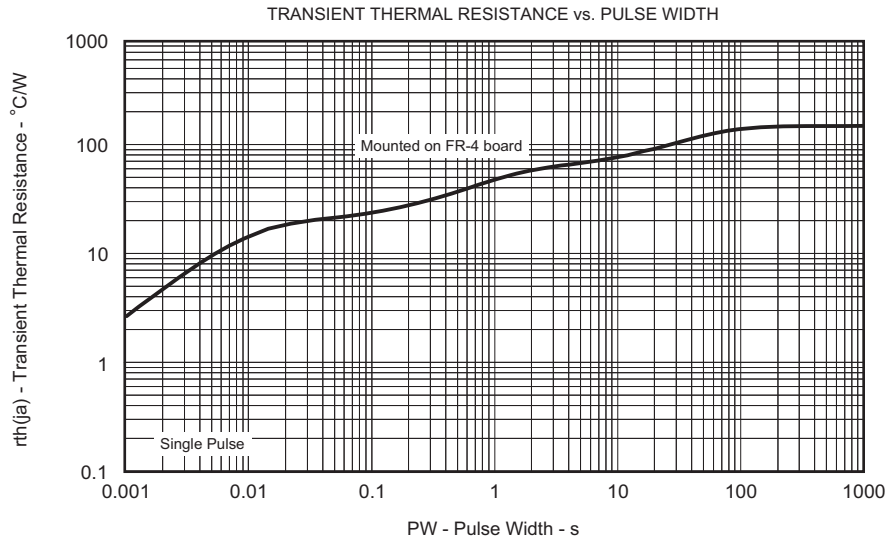


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Ver 1.6

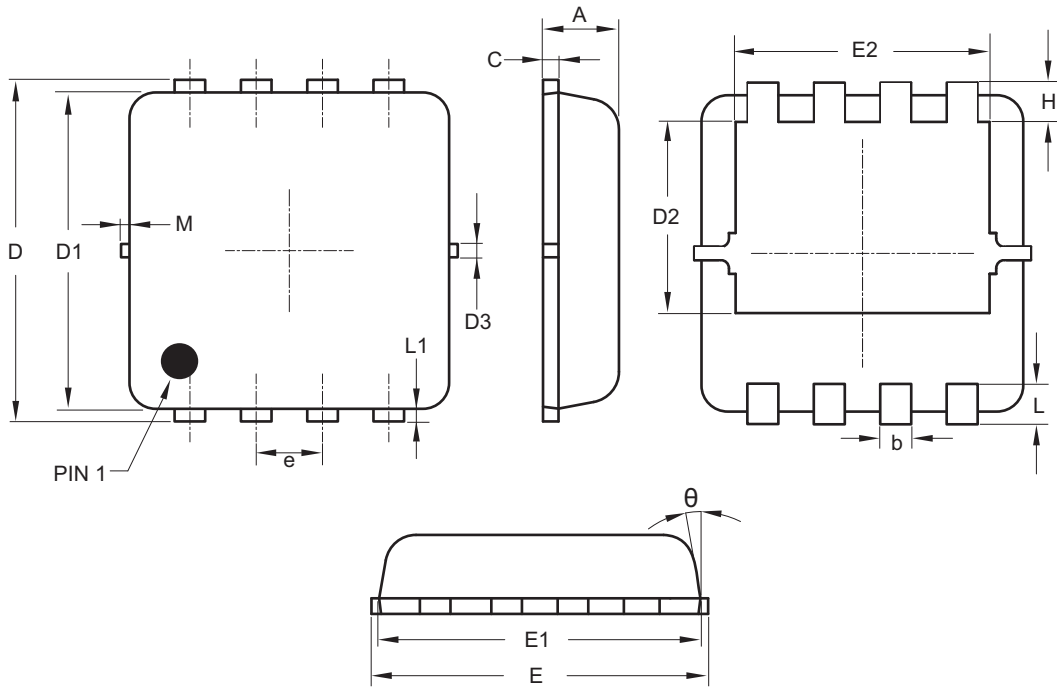


Nov,30,2020



PACKAGE OUTLINE DIMENSIONS

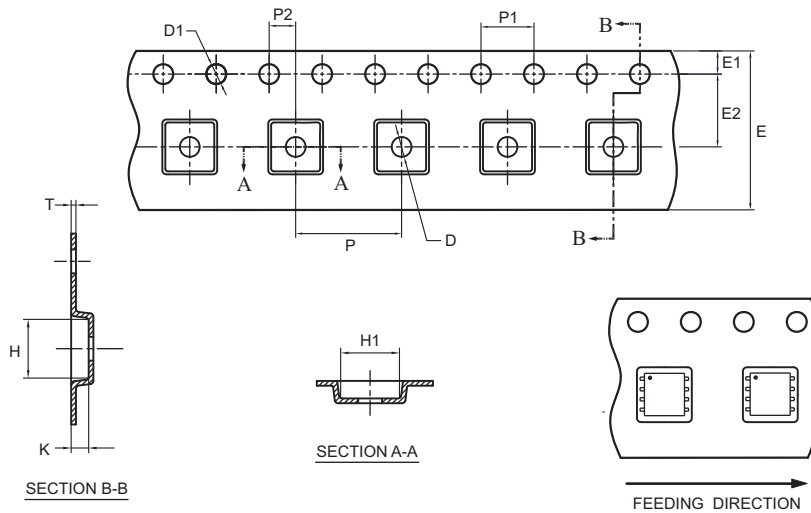
TSON 3.3 x 3.3



SYMBOLS	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.70	0.80	0.90
b	0.24	0.30	0.35
C	0.10	0.15	0.25
D	3.10	3.30	3.45
D1	2.90	3.10	3.20
D2	1.65	1.82	1.98
D3	—	0.13	—
E	3.10	3.25	3.40
E1	2.90	3.10	3.20
E2	2.25	2.40	2.59
e	0.65 BSC		
H	0.30	0.40	0.50
L	0.30	0.40	0.50
L1	—	0.15	—
M	—	—	0.15
θ	—	10°	12°

TSON 3.3 x 3.3 Tape and Reel Data

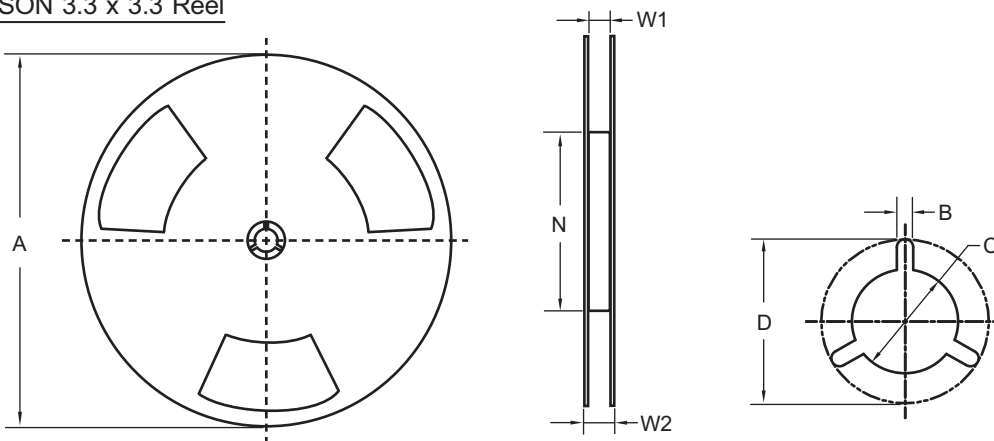
TSON 3.3 x 3.3 Tape



unit:

PACKAGE	D	D1	E	E1	E2	H	H1	K	P	P1	P2	T
S mini 8	1.50 (MIN)	1.50 +0.10 -0.00	12.0 +0.30 -0.10	1.75 0.10	5.50 0.05	3.70 0.10	3.70 0.10	1.10 0.10	8.0 0.10	4.0 0.10	2.0 0.05	0.3 0.05

TSON 3.3 x 3.3 Reel



UNIT:

TAPE SIZE	REEL SIZE	A	B	C	D	N	W1	W2
12	13"	330 1.0	1.5 ^{+0.5} -0.2	13.0 ^{+0.5} -0.2	20.2(ref.)	178 ^{+0.0} -2.0	12.4 ^{+2.0} -0.0	18.4(ref.)

TOP MARKING DEFINITION

