



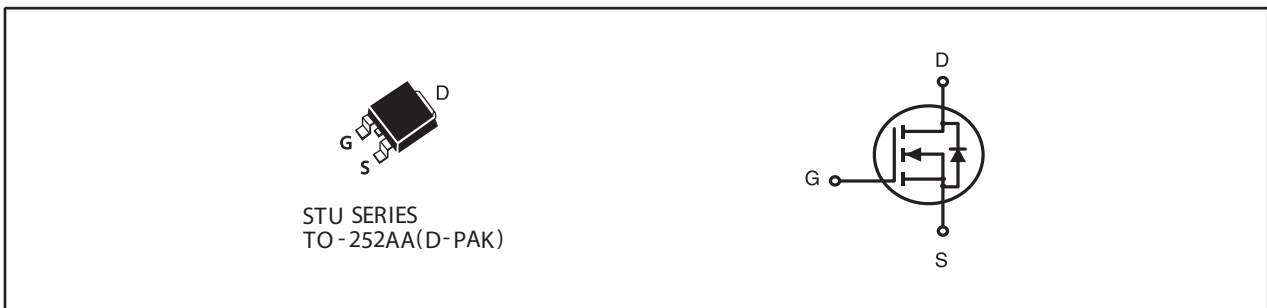
N-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

VDSS	ID	RDS(ON) (mΩ) Max
150V	30A	46 @ VGS=10V
		50 @ VGS=4.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- TO-252 Package.



ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ^c	$T_C=25^\circ\text{C}$	30
		$T_C=100^\circ\text{C}$	22
I_{DM}	-Pulsed ^{a,c}	60	A
E_{AS}	Single Pulse Avalanche Energy ^d	216	mJ
P_D	Maximum Power Dissipation $T_C=25^\circ\text{C}$	115	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 175	$^\circ\text{C}$

THERMAL CHARACTERISTICS

$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.3	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	55	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
B _V DSS	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	150			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =120V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.2		2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =20A		35	46	m ohm
		V _{GS} =4.5V , I _D =20A		37	50	m ohm
g _{FS}	Forward Transconductance	V _{DS} =5V , I _D =20A		55		S
DYNAMIC CHARACTERISTICS^b						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		3755		pF
C _{OSS}	Output Capacitance			207		pF
C _{RSS}	Reverse Transfer Capacitance			160		pF
SWITCHING CHARACTERISTICS^b						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =50V I _D =10A V _{GS} =4.5V R _{GEN} = 3.3 ohm		18		ns
t _r	Rise Time			20		ns
t _{D(OFF)}	Turn-Off Delay Time			65		ns
t _f	Fall Time			15		ns
Q _g	Total Gate Charge		V _{DS} =75V, I _D =10A, V _{GS} =4.5V		40	
Q _{gs}	Gate-Source Charge	V _{DS} =75V, I _D =10A, V _{GS} =4.5V		10		nC
Q _{gd}	Gate-Drain Charge			21		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1.2	V

Notes

- Pulse Test: Pulse Width ≤ 10us, Duty Cycle ≤ 1%.
- Guaranteed by design, not subject to production testing.
- Drain current limited by maximum junction temperature.
- Starting T_J=25°C, L=0.3mH, V_{DD}= 25V.
- Mounted on FR4 Board of 1 inch² , 2oz.

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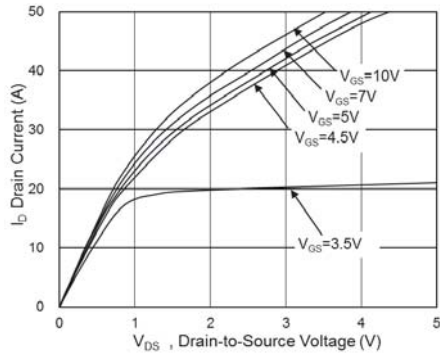


Fig.1 Typical Output Characteristics

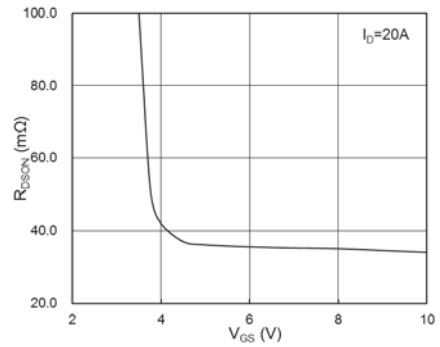


Fig.2 On-Resistance vs. Gate-Source

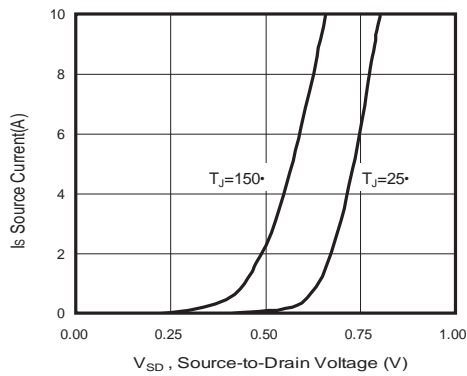


Fig.3 Forward Characteristics Of Reverse

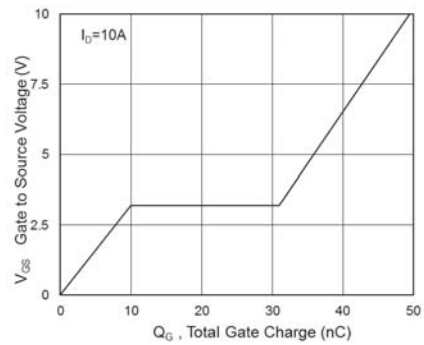


Fig.4 Gate-Charge Characteristics

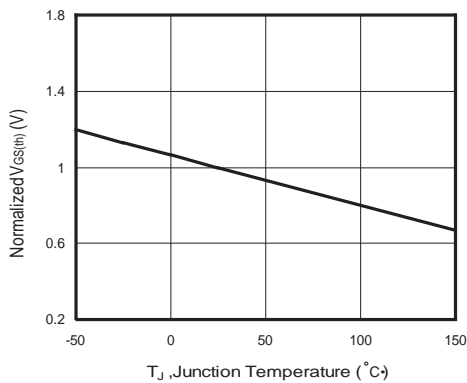


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

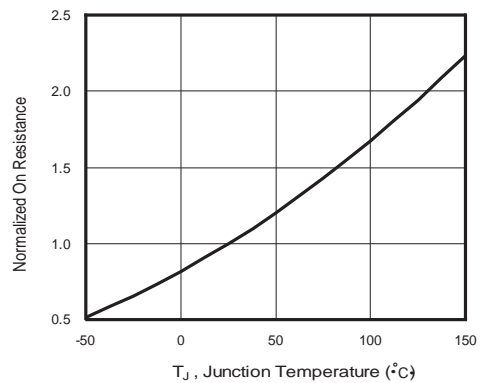


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

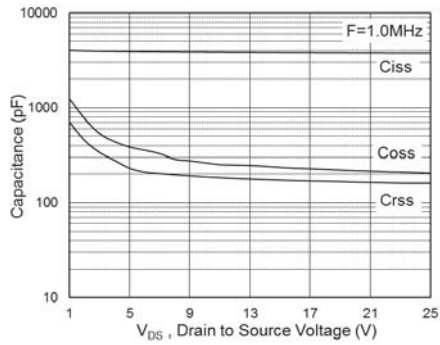


Fig.7 Capacitance

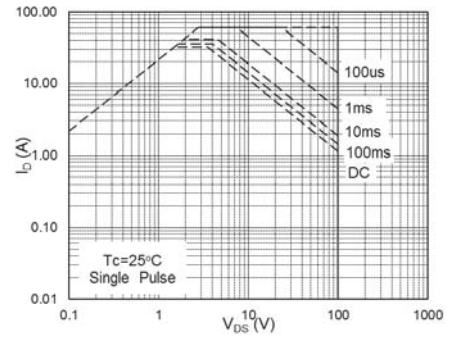


Fig.8 Safe Operating Area

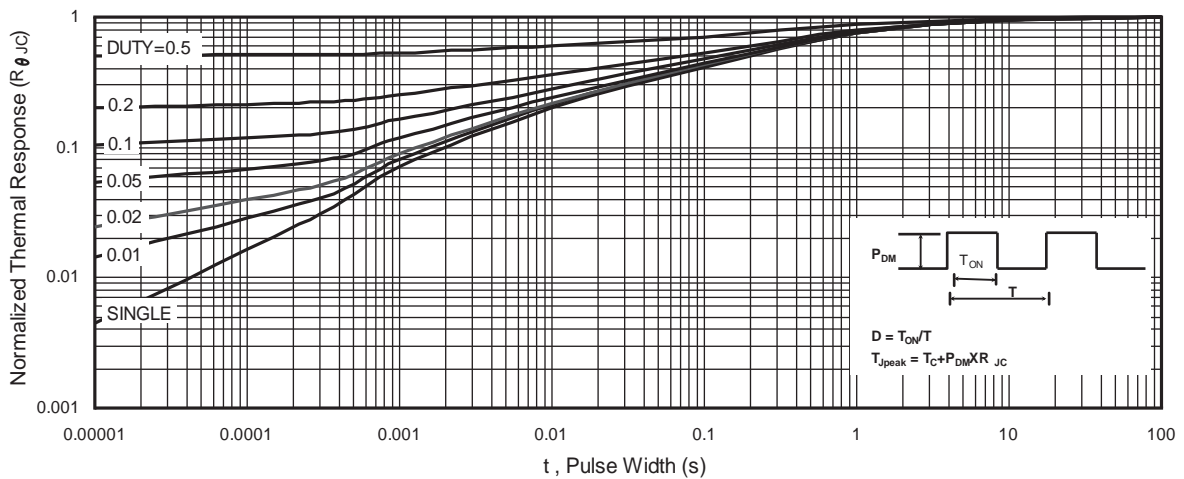
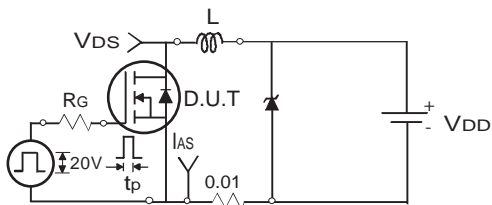
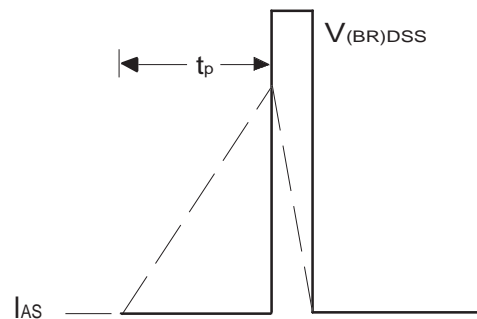


Fig.9 Normalized Maximum Transient Thermal Impedance



Uncamped Inductive Test Circuit

Fig.10a



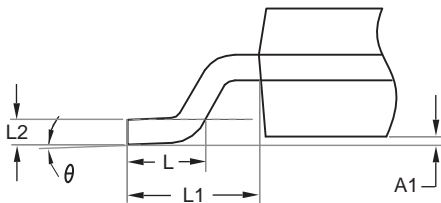
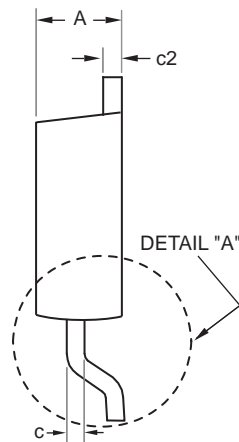
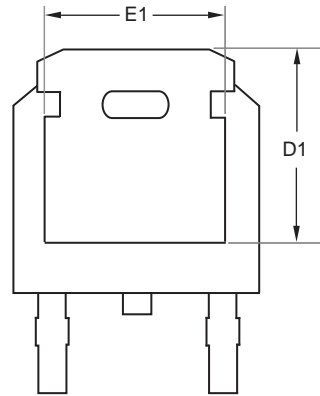
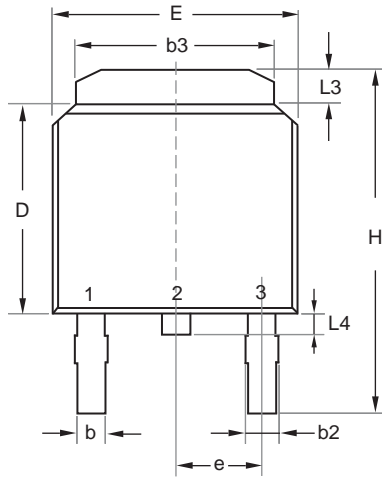
Unclamped Inductive Waveforms

Fig.10b

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TO-252



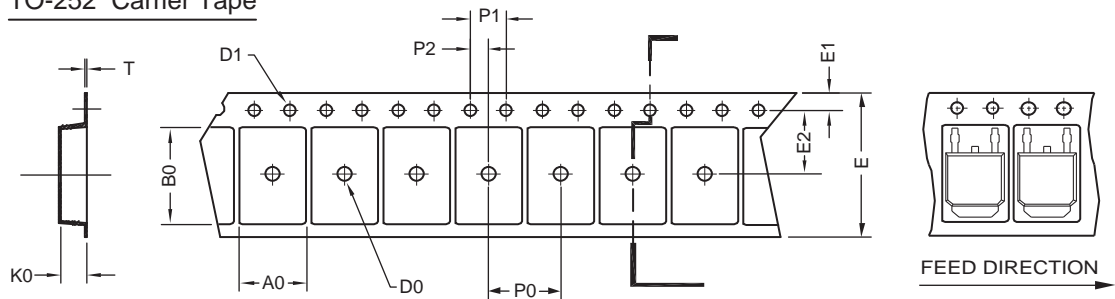
DETAIL "A"

SYMBOLS	MILLIMETERS	
	MIN	MAX
A	2.200	2.380
A1	0.000	0.127
b	0.635	0.889
b2	0.762	1.143
b3	5.200	5.460
c	0.450	0.600
c2	0.450	0.580
D	6.000	6.223
D1	5.210	5.380
e	2.286 BSC	
E	6.400	6.731
E1	4.318	4.900
H	9.400	10.400
L	1.400	1.770
L1	2.743 REF	
L2	0.508 BSC	
L3	0.890	1.270
L4	0.640	1.010
θ	0°	10°

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TO-252 Tape and Reel Data

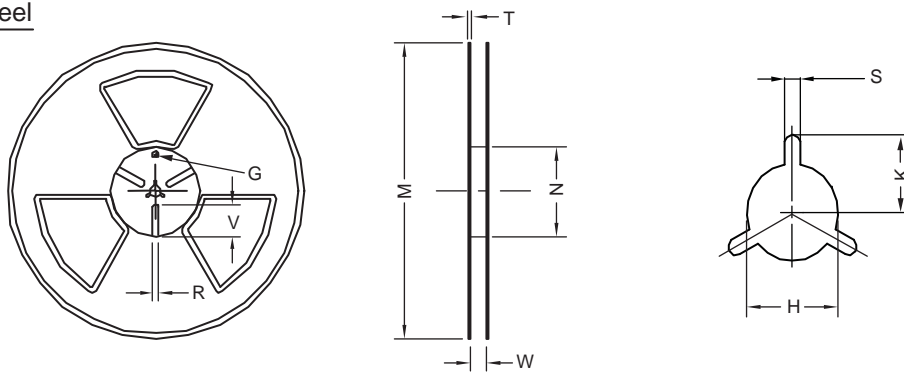
TO-252 Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
TO-252 (16 mm)	6.96 ±0.1	10.49 ±0.1	2.79 ±0.1	φ 2	φ 1.5 + 0.1 - 0	16.0 ±0.3	1.75 ±0.1	7.5 ±0.15	8.0 ±0.1	4.0 ±0.1	2.0 ±0.15	0.3 ±0.05

TO-252 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	T	H	K	S	G	R	V
16 mm	φ 330	φ 330 ± 0.5	φ 97 ± 1.0	17.0 + 1.5 - 0	2.2	φ 13.0 + 0.5 - 0.2	10.6	2.0 ±0.5	---	---	---

TOP MARKING DEFINITION

