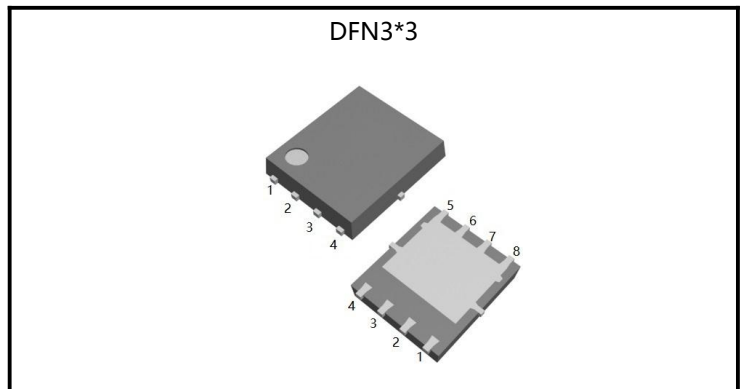


MOSFET

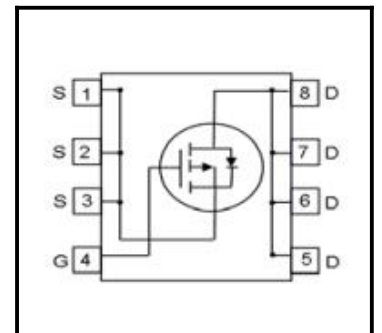
-35 Amps,-30 Volts P-CHANNEL MOSFET

FEATURE

- ◆ Low gate charge
- ◆ Low Ciss
- ◆ Fast switching
- ◆ 100% avalanche tested
- ◆ Improved dv/dt capability
- ◆ RoHS 2.0 Compliant



Parameter	Values	Unit
Bvdss	-30	V
Id	-35	A
Rdson(max)	12	mΩ



Ordering Code	Marking	Package	Packaging
D35P03HL	D35P03HL	DFN3*3	Tape and reel

Absolute Maximum Ratings($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Voltage	V_{DSS}	-	-	30	V	-
Gate-Source Voltage	V_{GS}	-20	-	20	V	-
Continuous Drain Current(Package Limited)	I_D	-	-	-35	A	$T_C=25^{\circ}\text{C}$
Pulsed Drain Current(Note1)	I_{DM}	-	-	-105	A	-
Single Pulse Avalanche Energy	E_{AS}	-	-	56	mJ	$L=0.5\text{mH}, V_D=-24\text{V}, T_C=25^{\circ}\text{C}$
Maximum Power Dissipation	P_D	-	-	25	W	$T_C=25^{\circ}\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55	-	150	$^{\circ}\text{C}$	-
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	-	-	260	$^{\circ}\text{C}$	-

Thermal Characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Thermal resistance , Channel to Case	$R_{th(ch-c)}$	-	-	5	$^{\circ}\text{C}/\text{W}$	-

Electrical Characteristics ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Static characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$
Gate-Body Leakage Current, Forward	I_{GSSF}	-	-	100	nA	$V_{GS}=20\text{V}, V_{DS}=0\text{V}$
Gate-Body Leakage Current, Reverse	I_{GSSR}	-	-	-100	nA	$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.2	-	-2.5	V	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$
Drain-Source On-State Resistance	$R_{DS(on)}$	-	8.5	12	m Ω	$V_{GS}=-10\text{V}, I_D=-15\text{A}$
		-	15	22	m Ω	$V_{GS}=-4.5\text{V}, I_D=-15\text{A}$
Gate Resistance	R_g	-	10	15	Ω	$V_{GS}=0\text{V}, V_{DS}$ Open, $f=1\text{MHz}$
Forward Transconductance	g_{fs}	-	6	-	S	$V_{DS}=-15\text{V}, I_D=-13.9\text{A}$

Dynamic characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Input Capacitance	C_{iss}	-	2703	3700	pF	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$
Output Capacitance	C_{oss}	-	264	800	pF	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$
Reverse Transfer Capacitance	C_{rss}	-	196	600	pF	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$
Turn-On Delay Time	$t_{d(on)}$	-	14.8	70	ns	$V_{DD}=-15V, R_G=10\Omega, V_{GS}=-10V, R_L=1\Omega$
Turn-On Rise Time	t_r	-	3.8	50	ns	$V_{DD}=-15V, R_G=10\Omega, V_{GS}=-10V, R_L=1\Omega$
Turn-Off Delay Time	$t_{d(off)}$	-	77.2	130	ns	$V_{DD}=-15V, R_G=10\Omega, V_{GS}=-10V, R_L=1\Omega$
Turn-Off Fall Time	t_f	-	39.6	90	ns	$V_{DD}=-15V, R_G=10\Omega, V_{GS}=-10V, R_L=1\Omega$

Gate charge characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Total Gate Charge	Q_g	-	53.1	80	nC	$V_{DS}=-24V, I_D=-30A, V_{GS}=-10V$
Gate-Source Charge	Q_{gs}	-	15.9	50	nC	$V_{DS}=-24V, I_D=-30A, V_{GS}=-10V$
Gate-Drain Charge	Q_{gd}	-	12.3	45	nC	$V_{DS}=-24V, I_D=-30A, V_{GS}=-10V$

Reverse diode

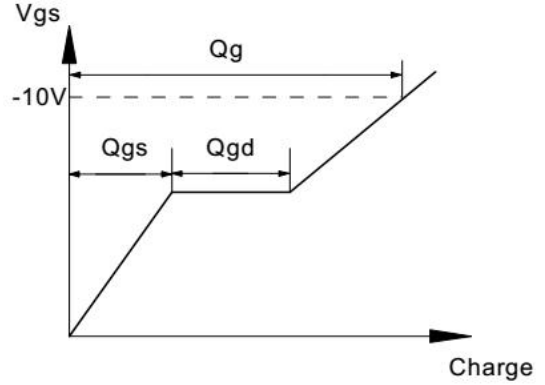
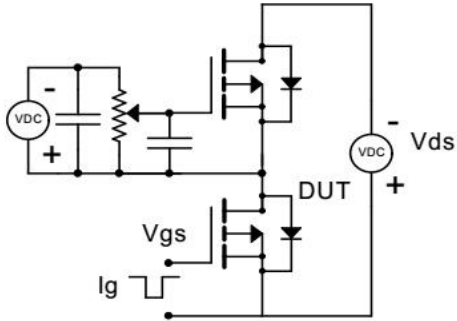
Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Continuous Diode Forward Current	I_S	-	-	-35	A	-
Pulsed Diode Forward Current	I_{SM}	-	-	-105	A	-
Diode Forward Voltage	V_{SD}	-	-	-1.2	V	$I_S=-15A, V_{GS}=0V$
Reverse Recovery Time	t_{rr}	-	68	120	ns	$V_D=-30V, I_F=-10A$
Reverse Recovery Charge	Q_{rr}	-	53.3	110	nC	$di/dt=100A/\mu s, (Note2)$

Notes

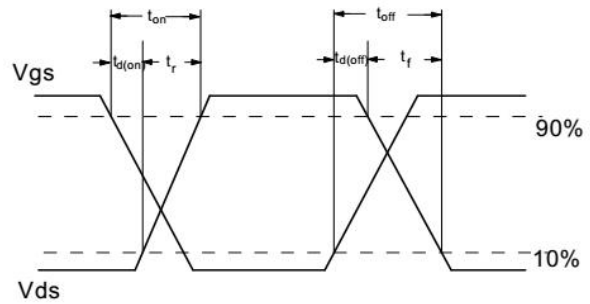
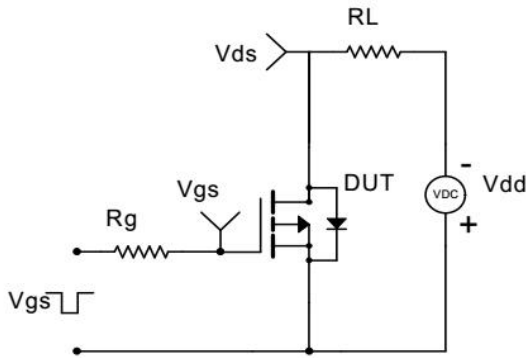
1. Repetitive Rating:pulse width limited by maximum junction temperature.
2. Pulse width $\leq 300\mu s$,duty cycle $\leq 2\%$.

RATING AND CHARACTERISTIC CURVES

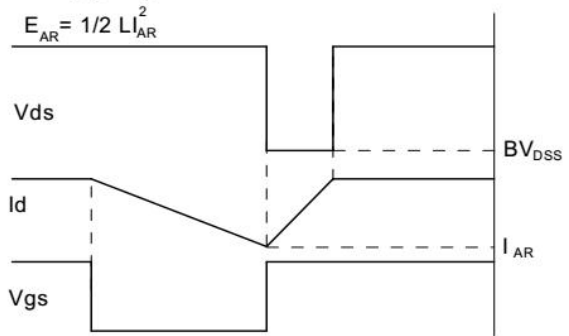
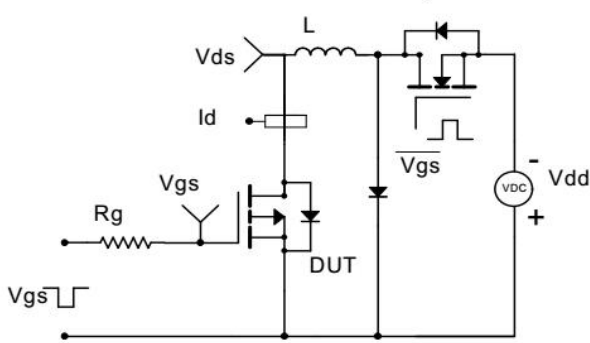
Gate Charge Test Circuit & Waveform



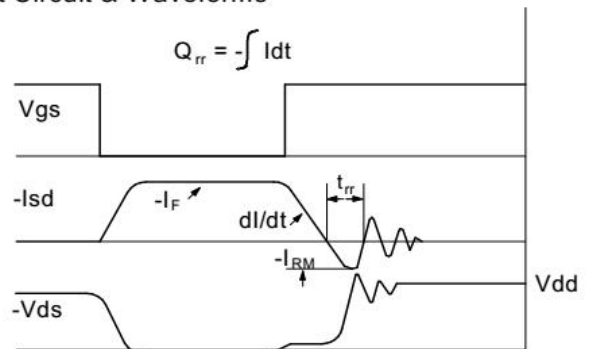
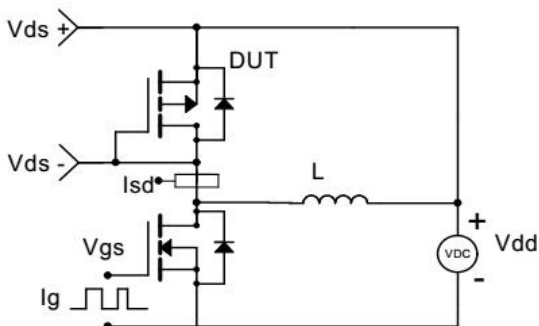
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms





RATING AND CHARACTERISTIC CURVES

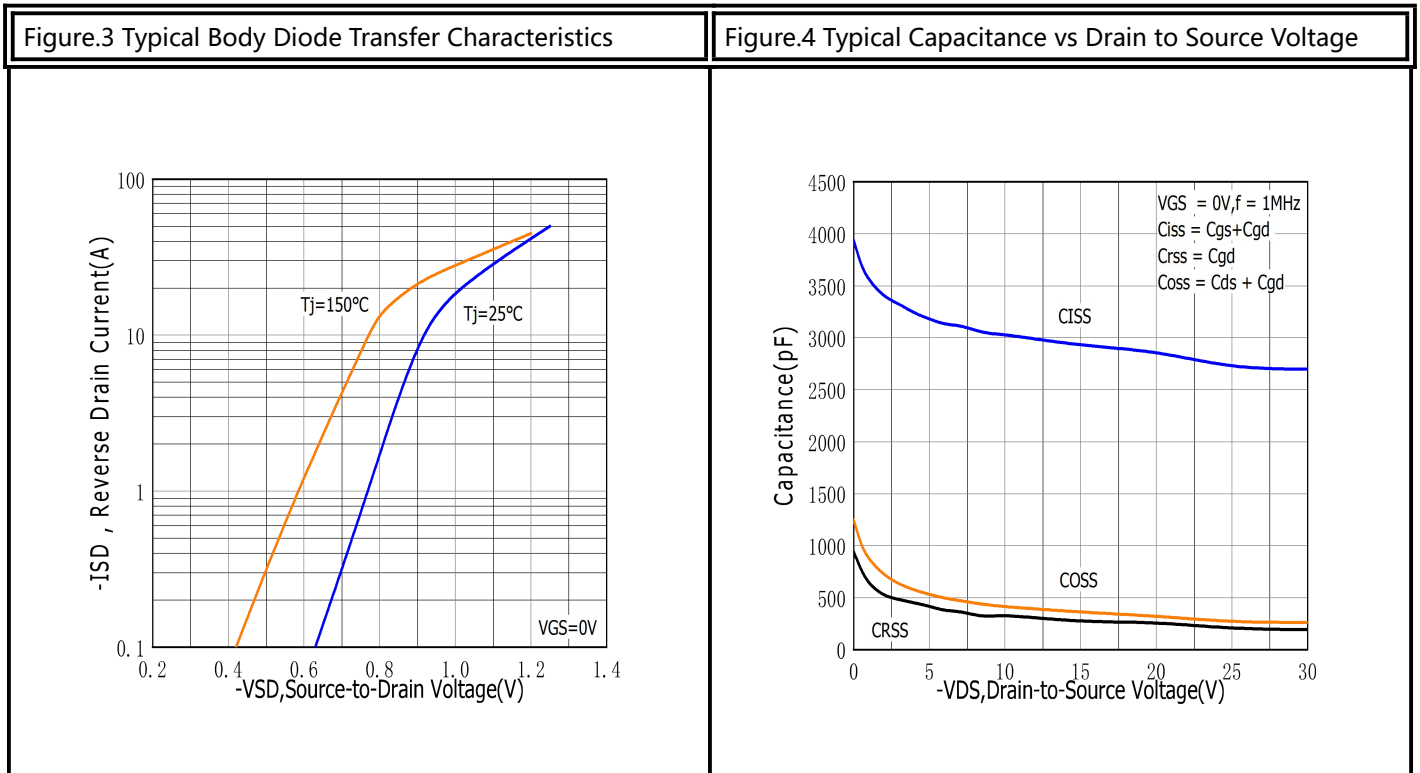
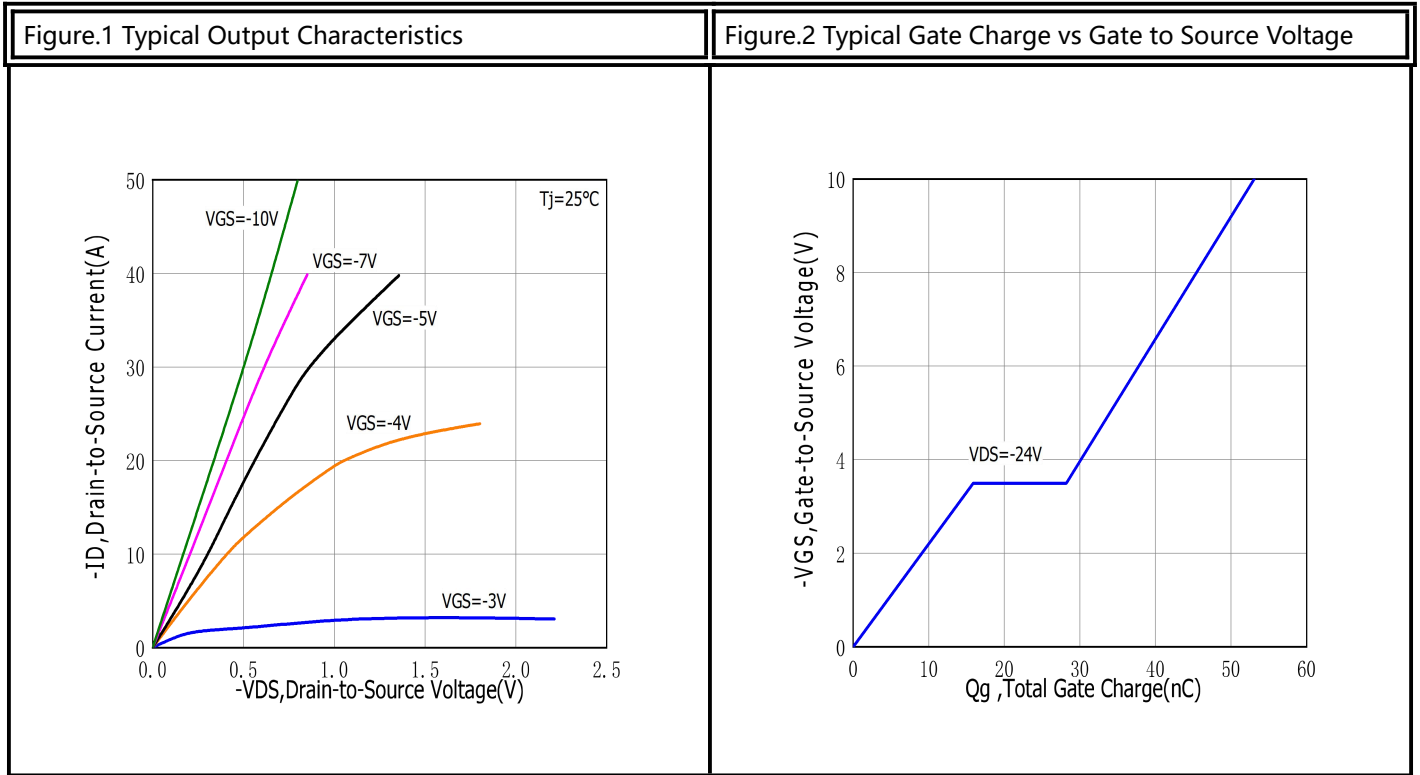




Figure.5 Typical Breakdown Voltage vs Junction Temperature

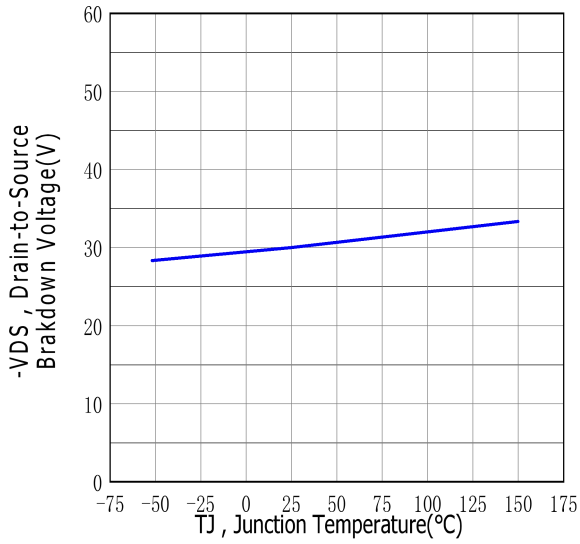


Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

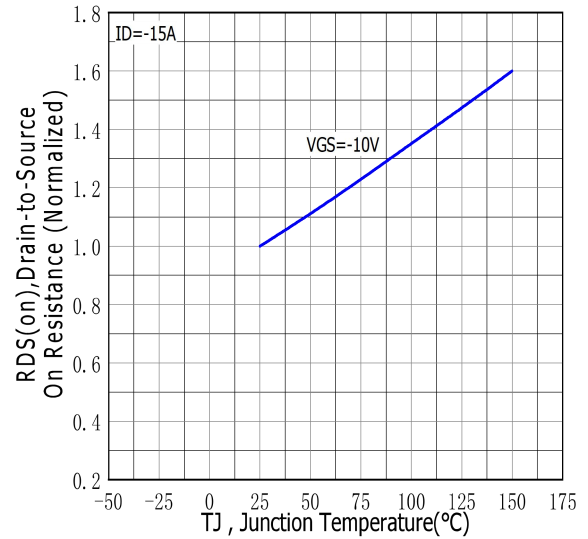


Figure.7 Maximum Forward Bias Safe Operating Area

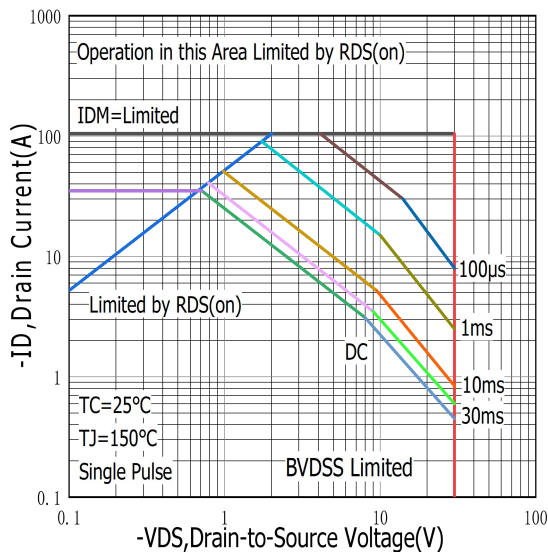
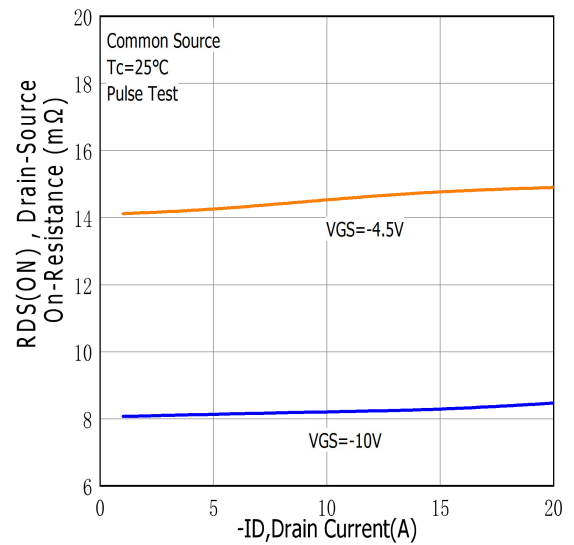


Figure.8 Typical Drain to Source ON Resistance vs Drain Current



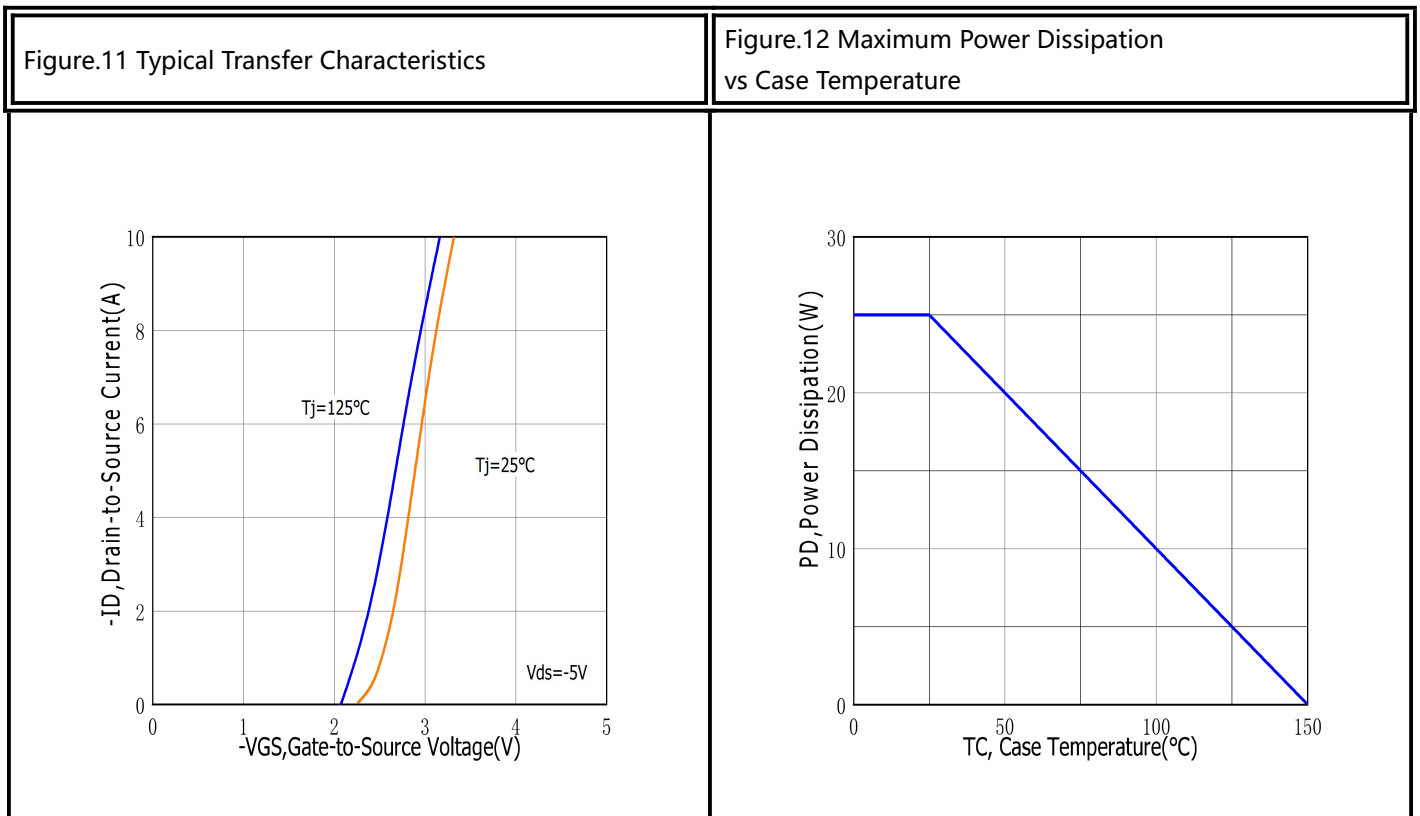
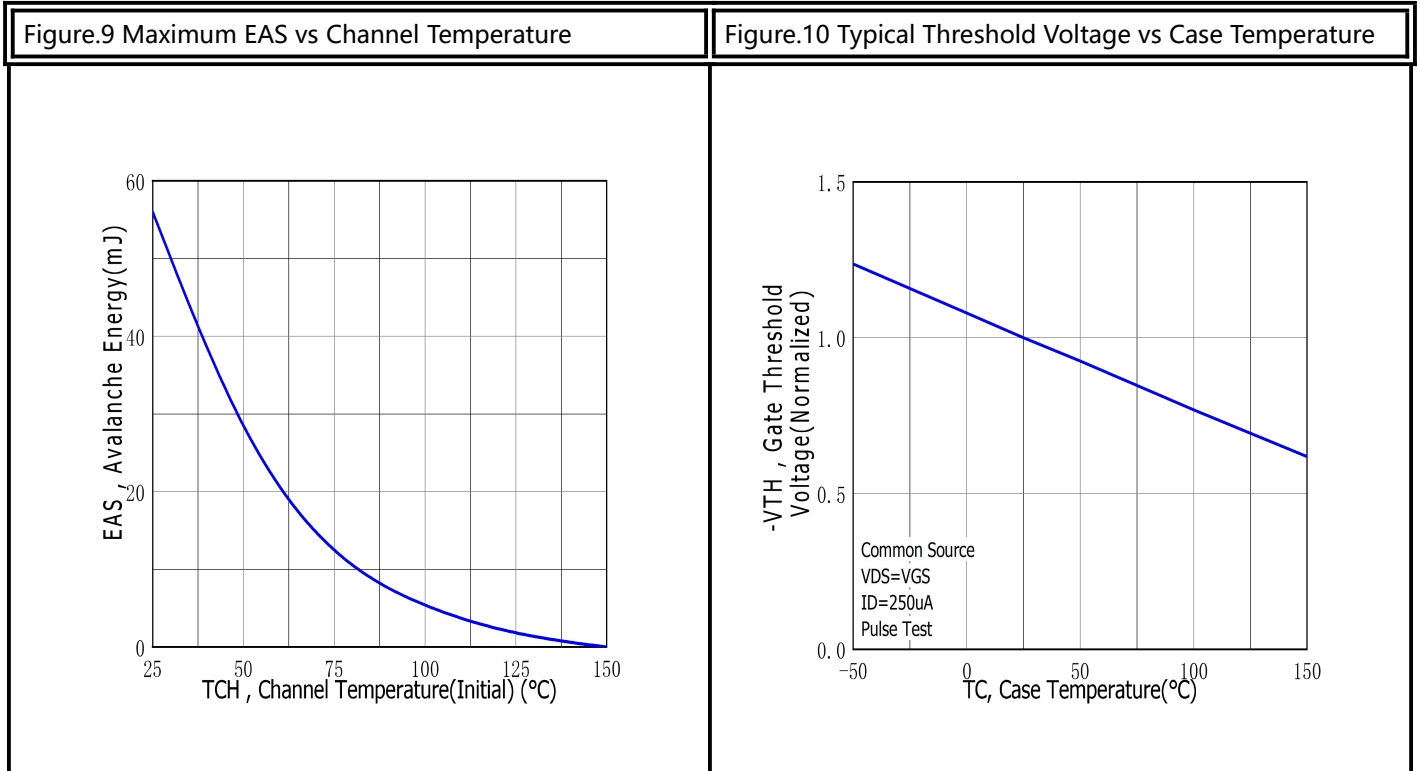
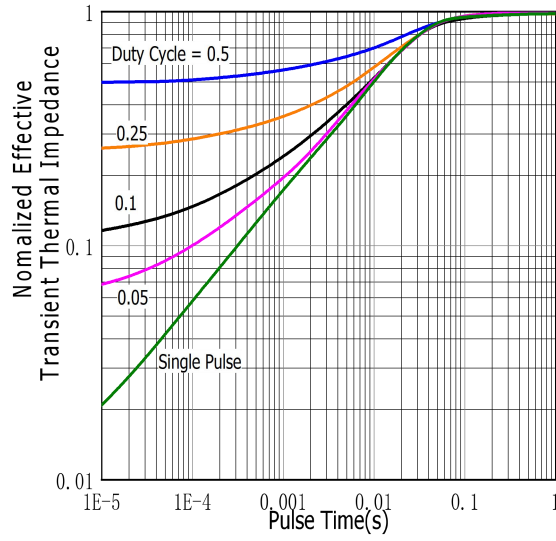
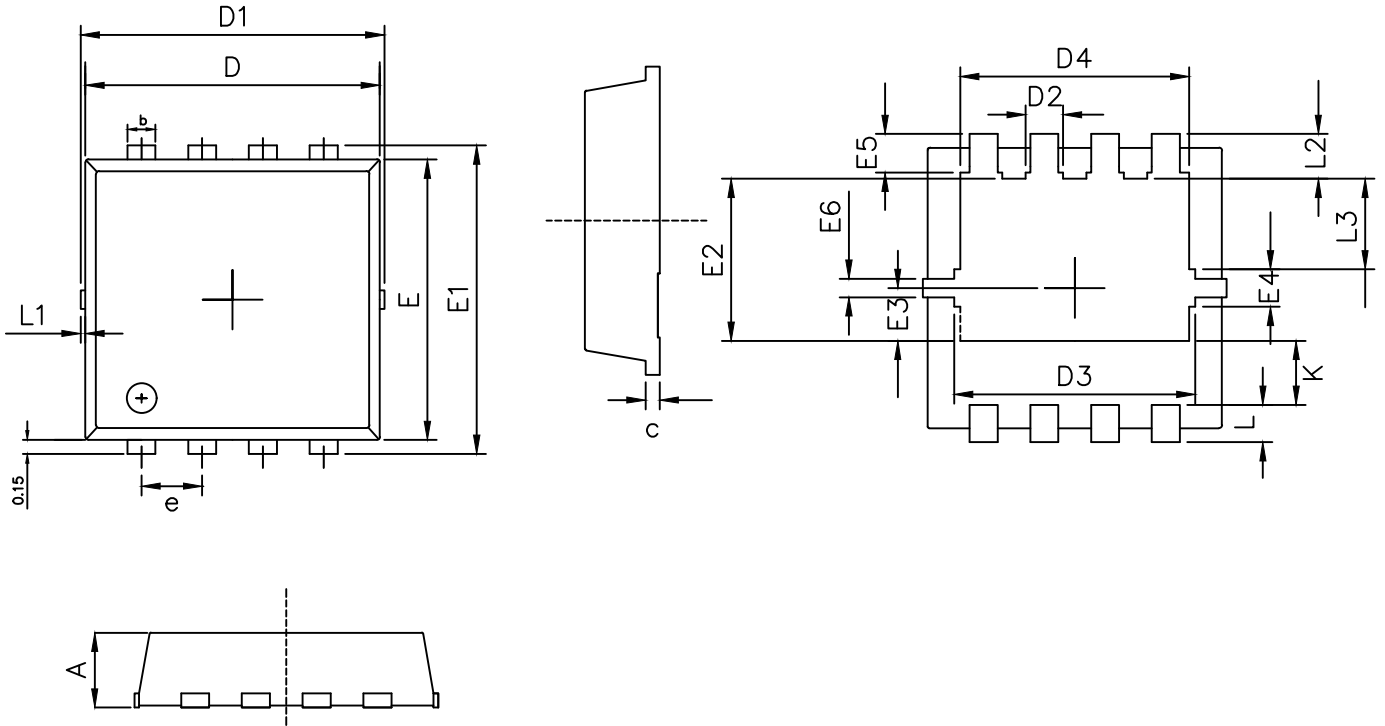




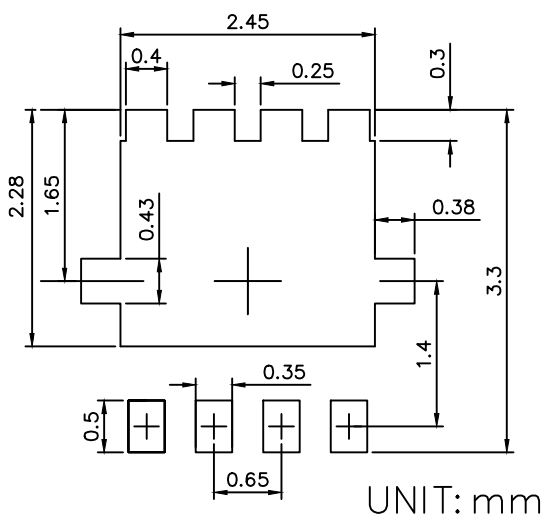
Figure.13 Maximum Effective Thermal Impedance , Junction to Case



DFN3x3 PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



	MIN	NOM	MAX
A	0.70	0.85	1.00
b	0.24	0.30	0.40
c	0.10	0.15	0.25
D	3.00	3.15	3.25
D1	3.10	3.25	3.50
D2	0.30	0.40	0.50
D3	2.50	2.58	2.70
D4	2.35	2.45	2.55
E	2.90	3.00	3.10
E1	3.15	3.30	3.45
E2	1.65	1.75	1.85
E3	0.48	0.58	0.68
E4	0.23	0.40	0.50
E5	0.20	0.30	0.40
E6	0.075	0.17	0.25
e	0.55	0.65	0.75
K	0.52	0.72	0.82
L	0.25	0.40	0.55
L1	0.00	0.05	0.10
L2	0.28	0.43	0.58
L3	0.88	0.98	1.08