

RoHS Compliant Product
A suffix of "-C" specifies halogen free

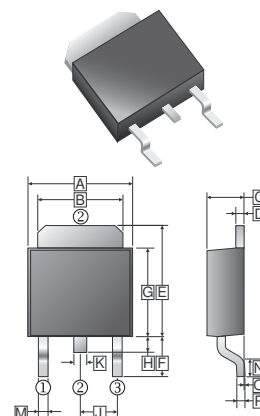
FEATURES

- 150V, 20A, $R_{DS(ON)} \leq 70m\Omega @ V_{GS}=10V$
- Super high dense cell design for extremely low $R_{DS(ON)}$
- High power and current handing capability
- Green Device Available

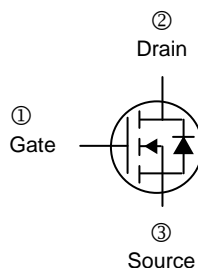
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

TO-252 (D-Pack)



MARKING



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.336	REF.
B	4.95	5.50	K	0.89	REF.
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90	REF.	P	0.58	REF.
G	5.40	6.40			
H	0.60	1.20			

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	150	V	
Gate-Source Voltage	V_{GS}	± 25	V	
Continuous Drain Current @ $V_{GS}=10V$ ¹	I_D	$T_C=25^\circ C$	20	A
		$T_C=100^\circ C$	14	A
Pulsed Drain Current ²	I_{DM}	70	A	
Total Power Dissipation ³	P_D	$T_C=25^\circ C$	50	W
		$T_A=25^\circ C$	2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$	
Thermal Resistance Rating				
Maximum Thermal Resistance from Junction to Case ¹	$R_{\theta JC}$	2.5	$^\circ C / W$	
Maximum Thermal Resistance from Junction to Ambient ¹	$R_{\theta JA}$	62.5	$^\circ C / W$	

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

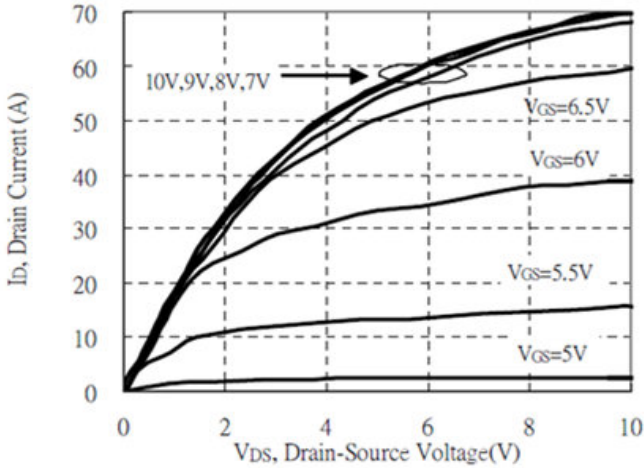
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
Drain-Source Breakdown Voltage	BV_{DSS}	150	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 25\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=120\text{V}, V_{GS}=0$
		$T_J=85^\circ\text{C}$	-	-	30		
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	55	70	m Ω	$V_{GS}=10\text{V}, I_D=15\text{A}$	
		-	65	85		$V_{GS}=6\text{V}, I_D=10\text{A}$	
Total Gate Charge	Q_g	-	20	-	nC	$I_D=15\text{A}$ $V_{DS}=75\text{V}$ $V_{GS}=10\text{V}$	
Gate-Source Charge	Q_{gs}	-	5.5	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	7	-			
Turn-on Delay Time	$T_{d(on)}$	-	6	-	nS	$V_{DS}=75\text{V}$ $I_D=10\text{A}$ $V_{GS}=10\text{V}$ $R_{GEN}=3\Omega$	
Rise Time	T_r	-	5	-			
Turn-off Delay Time	$T_{d(off)}$	-	13	-			
Fall Time	T_f	-	6	-			
Input Capacitance	C_{iss}	-	1270	-	pF	$V_{GS}=0\text{V}$ $V_{DS}=25\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	115	-			
Reverse Transfer Capacitance	C_{rss}	-	55	-			
Source-Drain Diode Characteristics							
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$V_{GS}=0\text{V}, I_S=10\text{A}, T_J=25^\circ\text{C}$	
Continuous Source Current ^{1,4}	I_S	-	-	20	A	$V_D=V_G=0\text{V}, \text{Force Current}$	
Pulsed Source Current ^{2,4}	I_{SM}	-	-	70			
Reverse Recovery Time	T_{RR}	-	30	-	nS	$I_F=10\text{A}, di/dt=100\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{RR}	-	100	-	nC		

Notes:

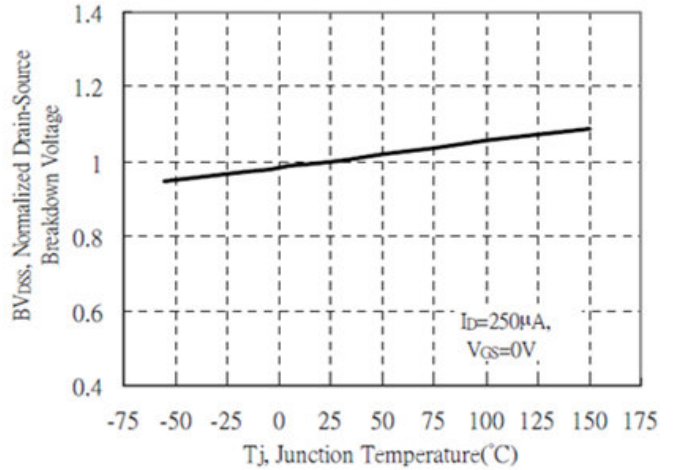
1. The data is tested when the surface of the device is mounted on a 1 inch² FR-4 board with 2OZ copper, $\leq 10\text{sec}$, $110^\circ\text{C}/\text{W}$ at steady state
2. The data is tested by the pulse: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. The power dissipation is limited by 150°C junction temperature
4. The data is theoretically the same as I_D and I_{DM} ; in real applications, it should be limited by the total power dissipation.

CHARACTERISTIC CURVES

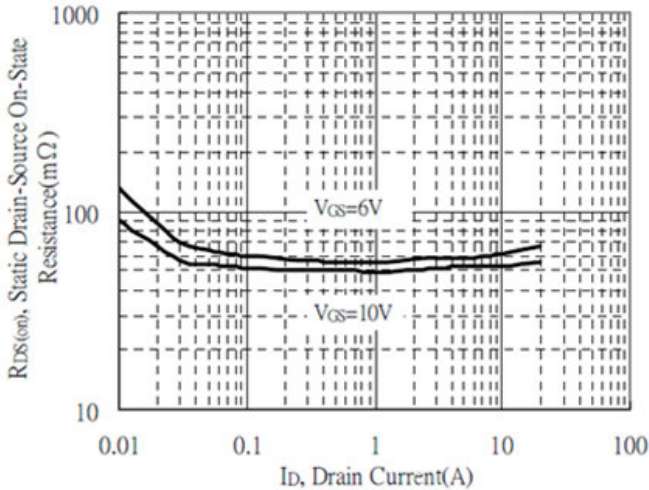
Typical Output Characteristics



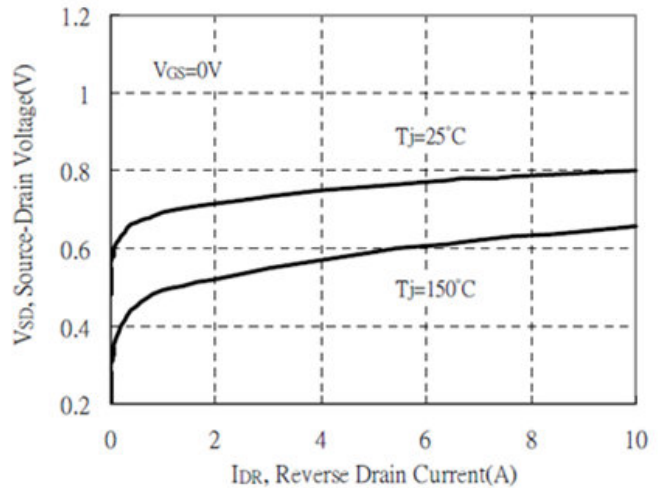
Brekdown Voltage vs Ambient Temperature



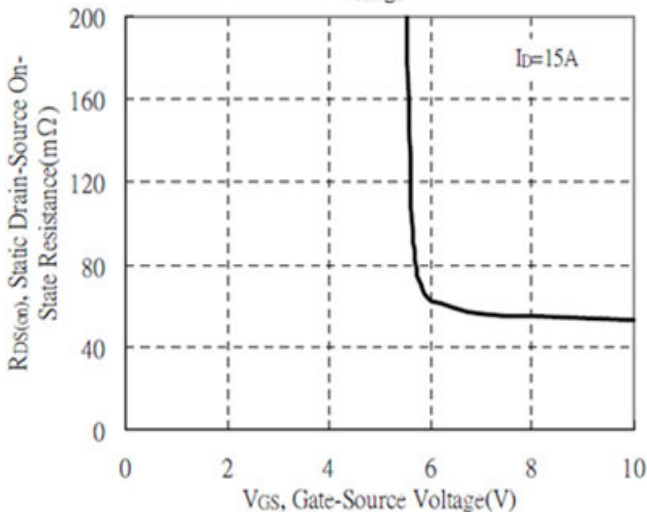
Static Drain-Source On-State resistance vs Drain Current



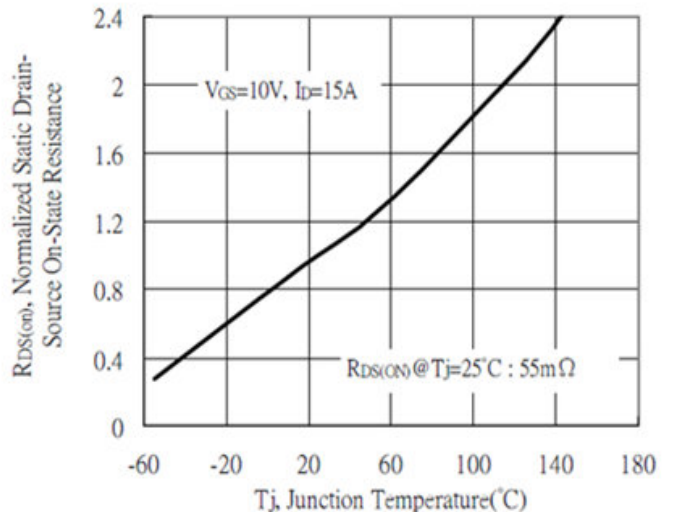
Reverse Drain Current vs Source-Drain Voltage



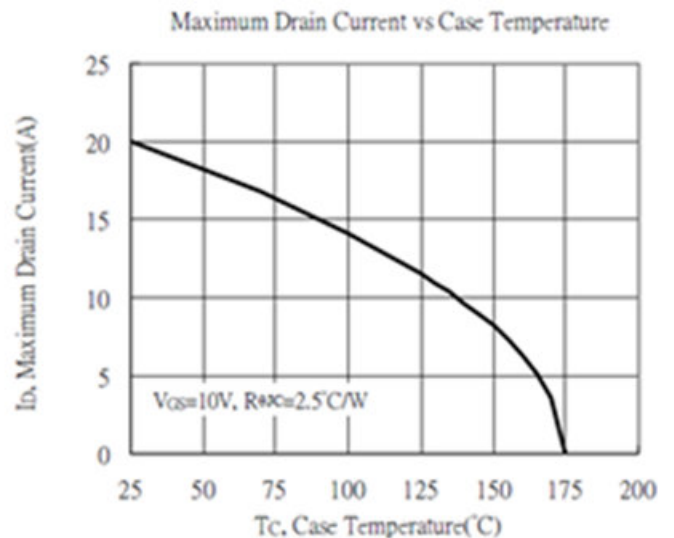
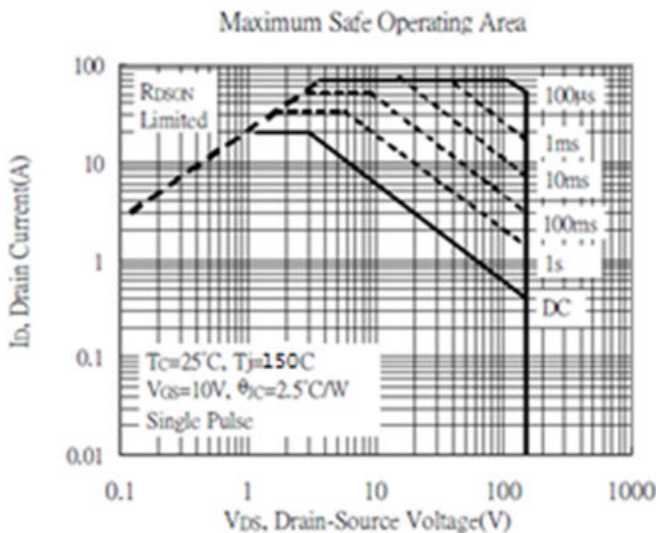
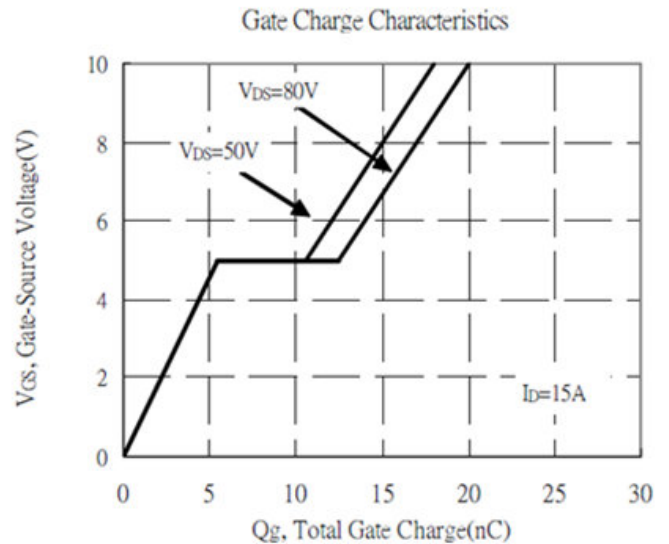
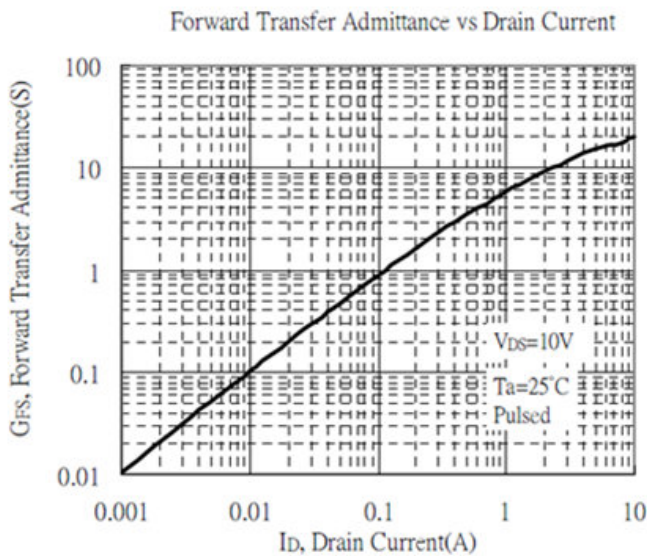
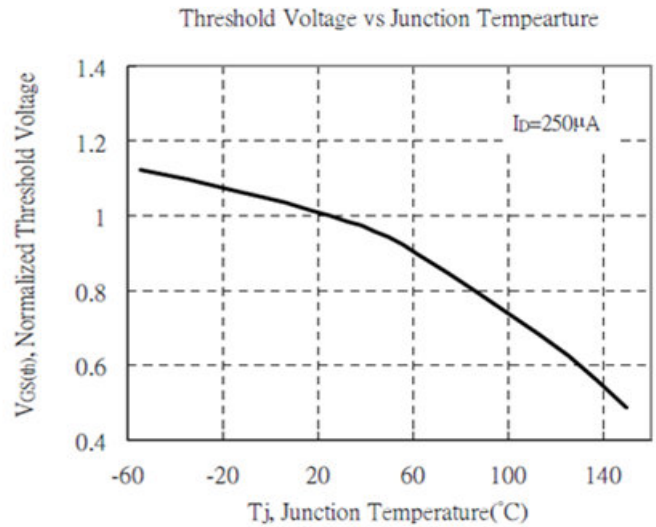
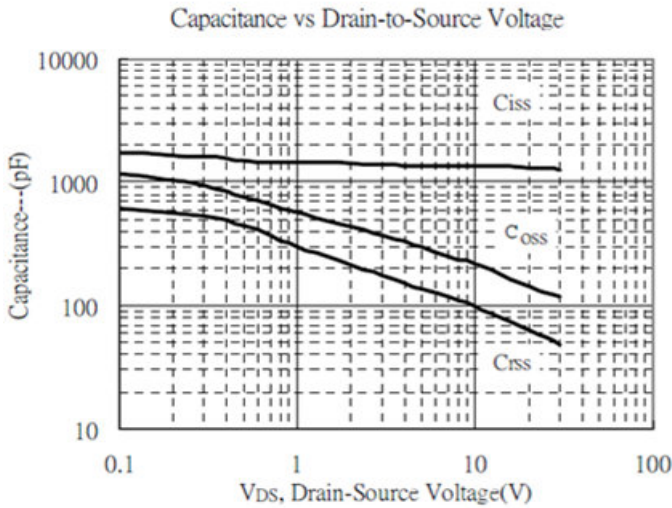
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

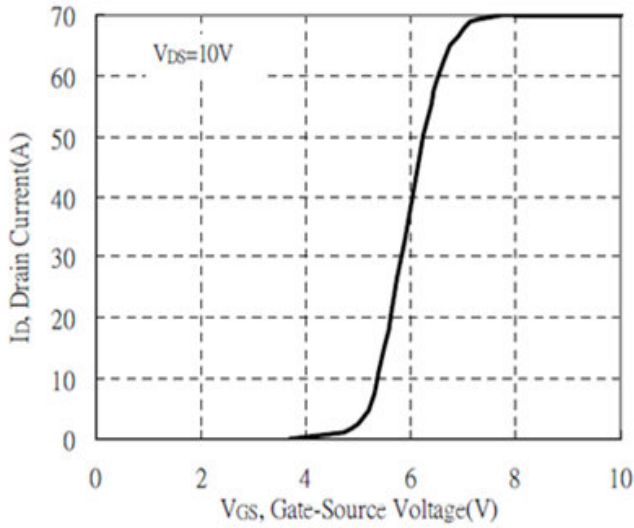


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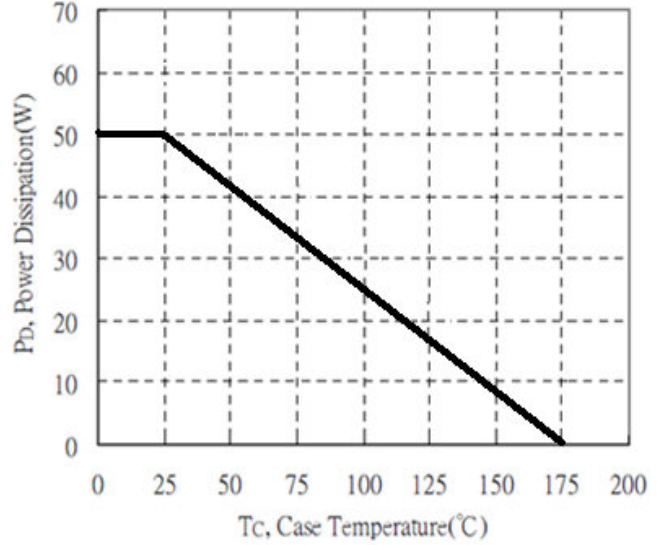


CHARACTERISTIC CURVES

Typical Transfer Characteristics



Power Derating Curve



Transient Thermal Response Curves

